COAL AGE

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Coal-Mining Results in the United States in 1918 and the Present Outlook

The Production of Coal in 1918 *was the Greatest in History*

The total output was	689,652,110 short tons
An increase of	38,526,110 short tons
Or nearly 6 per cent. over 1917.	
Anthracite production was	99,514,334 short tons
Or 179,334 tons more than in 1917.	
Bituminous production was	590,137,776 short tons
Or 38,346,776 tons more than in 1917.	
Coke output was	56,670,000 short tons
Or 1,603,000 tons more than in 1917.	

Byproduct coke increased nearly 4,000,000 tons while beehive coke decreased upward of 3,000,000 tons.

THE year that has just passed proved conclusively that in time of crisis, the ability of American mines to produce fuel is greater than the ability of our industries to consume it. If the war had continued through the year, the production of coal would undoubtedly have been in excess of 700,000,000 tons. Following the signing of the armistice in November the coal output decreased materially, the production in December reaching the lowest total of the year.

The country may look with satisfaction upon the record that was made in the emergency that existed. The stocks of coal in November were nearly three times as great as those that were in yards one year ago. Since bituminous coal is a product that cannot be satisfactorily stored for long periods, the natural outcome of the situation in recent weeks has been for the mines in most districts to curtail production. Only in this way can the large stocks of coal on hand in industrial yards be used up and normal conditions in the coal trade be resumed.

A backward look at the history of coal mining shows that only three times did it require an interval of two years for production to come back and exceed the last peak that was established. It is likely that the coal output in 1919 will be less than it was last year, for during the early months of this year the Nation will be going through a serious time of reconstruction. More than 10,000,000 tons of coal have already been released by the cancellation of war work in powder, airplane and small arms plants. The navy consumption will be 4,000,000 tons less this year. The railroads have effected plans that should save upward of 8,000,000 tons during 1919. Conservation measures that were forced on industries by the needs of the war will bear fruit during the coming months and bring about other material savings.

On the other hand, there is very little cessation of work in most of our great steel plants, and many businesses that were restricted during the last year are again resuming operations in a most hopeful fashion. One of the promising spots in the situation is the probability of greatly increased exports. For the first time in a generation America possesses a merchant marine. France is on the verge of a coal famine. The mines of both Belgium and France cannot be counted upon to relieve the situation, due to the fact that for the present there is absolutely no place for miners to live in the regions devastated by Germany. In most localities where mines existed there is not a single house to shelter anyone within ten or twenty miles of these collieries. Italy is also begging for American coal. These important foreign markets are ready for the American producer if only the Nation will immediately effect a program that will provide sufficient ships and establish reasonable rates. America should send 30,000,000 or 40,000,000 tons of coal to foreign markets in 1919 instead of the measly shipments of 10,000,000 or 15,000,000 tons heretofore exported.

Due to the war, Europe is minus the labor of 20,000,000 men killed or disabled. America today is not only the richest nation on earth but the greatest storehouse for raw materials that exists anywhere. Labor and capital understand each other better here than in any other country. This will result in a degree of coöperation that should introduce an era of unexampled prosperity. Fuel is the product necessary to turn the wheels. Before the last snow has fallen this winter, industries will be humming and America will have started on its career of greater internationalism in all its industries. The few weeks of hesitation furnish the coal operators with a much needed opportunity to rejuvenate and reëquip their plants. In 1919 competition will again be in force, and the best designed and best equipped collieries will enjoy the greatest success.

Activities in Different Coal-Producing States During 1918

THE year just passed has been a strenuous one. It was the first year in the history of the industry when Government control was exercised throughout the entire twelve months. As a general rule, however, operators who regarded Federal regulation with fear and trembling approach the return to normal, that is competitive, conditions with the same foreboding. Throughout the entire land a shortage of labor has been experienced. Enlistments and draftings into the army and navy have had their effect in reducing the operating forces of the mines. While no region was exempt, miners from the eastern and western fields were powerfully attracted by the high wages and steady work offered by the munition plants and shipyards. The coal digger, proverbially nomadic in his habits, promptly "pulled up stakes" and sought employment in more promising fields whenever his earnings from fuel production became lower than he thought they should be. Strenuous efforts were exerted by many of the coal companies in an effort to keep their working forces somewhere near normal and adequate. Car shortage, which has been the great handicap to maximum production in past years, was less felt in 1918 than was anticipated. Because of embargoes and priorities, however, shortages of mining supplies developed in some places. As a rule these were not in the main serious, and they exerted only a minor depressing effect upon production. As to the future, much is uncertain and few in the coal industry are willing to hazard a prediction. It is but natural that the problems of the immediate future, those that affect the destinies of the nation and in fact the entire race, should also possess a powerful influence over the third industry of the land. Most leaders of those engaged in coal production are agreed, however, that the immediate future is bright. There appears to be no reason why both output and consumption can not—within reasonable limits—be maintained. The following reports, written especially for *Coal Age*, in most cases by the chief mine inspectors of the various states, set forth in detail the results of the past year's effort. It is regrettable that the fiscal years of some states do not coincide with the calendar year. This is confusing, and a change to the calendar year would be beneficial to all concerned.

Alabama

By C. H. Nesbitt
Chief Mine Inspector, Birmingham, Ala.

THE coal production of Alabama for the year 1918, from present estimates, will total 19,000,000 tons. This is a decrease of 1,500,000 short tons as compared with 1917, notwithstanding that many new mines were opened and all operations ran with fair regularity throughout the entire year. To a certain extent the decrease is attributable to the influenza epidemic that prevailed the greater part of the last three months of the year; also to the fact that the mining industry of Alabama, like all other industries throughout the country, has been handicapped by a lack of labor. The state has been drawn upon heavily for men for military needs.

C. H. Nesbitt

The mining business in this state has been exceptionally good, and all grades and qualities of coal have not been equal to the demands for coking, steam and domestic purposes. Many improvements have been made during the year at different plants, notwithstanding the increased cost of material and the labor shortage. The fatalities recorded thus far have been those of a regular nature, and equal the record of 1917.

Proposed Government control of the transportation facilities on the Warrior River holds a bright prospect for the mining business in that section of the field. This will furnish a long desired outlet for Alabama coal as it is anticipated that shipment by river will enable a cheaper rate to Gulf ports.

The prospects for a good trade for 1919 are promising. This, however, depends upon industrial activities in other lines.

Alaska

By Sumner E. Smith
Alaska Engineering Commission, Eska, Alaska

PROBABLY about 75,000 tons of coal were mined in Alaska during the calendar year 1918. Of this amount the Alaskan Engineering Commission, operating leasing units Nos. 7 and 12 in the Matanuska Field, produced about 60,000 tons. Henry Baxter, manager of the Matanuska Coal Co., produced about 3000 tons early in the spring.

The Chickaloon Coal Co., of which Walter A. Gompertz is manager, ran several thousand feet of tunnels and has now started operations with diamond drills on its lease covering units Nos. 10 and 11 in the Matanuska Field. The Little Susitna Coal Co., operating near the main line of the Government R.R., not far from the Little Susitna River, produced about 2000 tons of coal; and the Cache Creek Dredging Co., operating a dredge on Cache Creek, mined about 5000 tons, which was used to generate electric power for the dredge.

Maitland & McNally, of Anchorage, Alaska, are operating what is known as the Wharf Mine at Bluff Point on Cook Inlet, producing coal for the cannery trade. They probably sold some 5000 tons during the year.

It is reported that the Alaska Coal and Petroleum Co., of Katalla, has mined about 1000 tons from its property on Canyon Creek in the Bering River Field. Operations have also been started by a company promoted by Falcon Joslyn and George Hazlett on a lease coving a portion of what was the old "English Company" ground at Katalla.

Several thousand tons of coal were mined in the Nenana Field for use in construction work on the Government

R.R. Most of this was produced from free-use 10-acre leases by small operators. The balance of the total tonnage was made up entirely from the production from free-use 10-acre permits scattered throughout the territory from Chicken Creek on the Upper Yukon to Candle on the Seward Peninsula. All of the foregoing figures of production are in short tons.

Arkansas

By Claude Speegle
State Mine Inspector, Fort Smith, Ark.

TO GIVE a review covering all the developments of the coal-mining industry of this state during 1918 is impossible. The coal region of Arkansas covers about 2000 square miles and comprises the six counties of Sebastian, Scott, Franklin, Johnson, Logan and Pope. The production of coal in each of these six counties is of commercial importance, but the counties producing the largest amount of coal are Sebastian, Johnson and Franklin. Sebastian County alone produces more than one-half the output of the entire state.

The approximate amount of capital invested in the coal-mining industry is $2,896,600. The production for the fiscal year ending June 30, 1918, was 2,373,687 short tons. The market value of this coal was approximately $7,777,080.

To produce this amount of coal 4425 miners and company men and 394 mules were worked in the mines. The miners used 99,028 kegs of black powder, at a cost to them of $198,056. The mines hoisted coal during 15,725 mine days.

Fatal and Nonfatal Accidents

Fourteen fatal and 150 nonfatal accidents occurred during this period. There were 169,549.14 tons of coal produced for each life lost and 15,824.87 tons for each nonfatal accident.

There were 378 office men and mine officials employed, making a grand total of 4803 persons actively engaged in and depending upon the mining industry. The total number of coal mines in the state is 155.

Washington and Crawford counties produce a small amount of coal, but owing to the thinness of the bed this fuel is only mined for local use. Ouachita County has a bed of lignite coal 15 miles in length and 7 miles wide, with coal 5 to 6 ft. in thickness. However, this field has never been developed, and its coal is only mined for local consumption. A great number of small mines and five large ones have been opened up in this state within the last year.

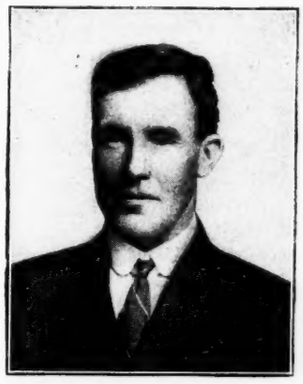
The amount of coal produced in Arkansas for the last six months of 1918 was approximately 1,257,434 short tons. This is as nearly correct as can be given at this time. The exact figures are available for five months, but the output for the month of December had to be estimated.

Colorado

By A. R. Tibbits
State Mine Inspector's Office, Denver, Colo.

DURING the year 1918 the coal industry of Colorado was confronted with many changes, but no effort was made tending toward stabilizing conditions. Early in the year there were insistent demands for increased production. Coal consumers both in this and the surrounding states were alarmed by reports of an impending coal famine, and there were strong indications that such a condition might be forthcoming.

In 1917 Colorado produced 12,515,305 tons, and in the beginning of 1918 the demand was such that it appeared we should face a shortage of approximately a million and a half tons. In order to avoid this danger every effort was made to speed up production. However, the industry was hampered by the issue of rules and regulations by the Federal Fuel Administration, often conflicting in their terms. The labor situation became serious, many of our best miners enlisted, others were drafted, and it should be remembered that Colorado for many months had been decidedly short of genuinely competent miners. Therefore, the operators were left to face the increasing demand with vastly reduced competent help.



James Dalrymple
State Mine Inspector, Colorado

The car situation on the other hand showed some improvement over previous periods. During March, April, May and June quite a number of mines at which small beds are being worked were compelled to close down because of the inability to operate at anything approaching a reasonable profit at the selling prices established by the Federal Fuel Administration. Later on, this matter was taken up with the authorities and partially adjusted, but this adjustment took considerable time, which resulted in a serious reduction in the tonnage of the properties involved.

Colorado consumes nearly all of her output, in 1917 only 2,634,458 tons were shipped out of the state, but when the system of zoning was put into effect by the Federal authorities, there was created a greater market outside of the state for Colorado to supply. A great drive for increased production was made, and all the mines worked full time. Early in the summer all the individual consumers who could pay for a winter's supply of fuel, and had the storage room, filled their bins. Also the yards of the local dealers and railroads were stacked up to the limit with coal, to meet demands for some time to come. In fact there is more coal stored in Colorado and by the jobbers in the adjoining states than in any previous year.

On Nov. 1 the production amounted to 10,812,548 tons, an increase of 516,379 tons compared with the same period of 1917, and about one-third of the expected increase. However, instead of a coal famine, there came a slump, which the sudden cessation of the war with the consequent cancelling of war orders and closing down of munition plants made more acute, with no prospect of an early revival of the business. The mines have slowed down, in some localities working only half-time, and many of the small operations have closed down altogether for lack of orders for their product. The drop in the production brought the increase of 516,379 tons of the first ten months down to 197,932 tons increase by the end of December.

With wages and the cost of production high, the retail selling prices were correspondingly high; but the wholesale prices per ton at the mines were slightly lower than in 1917.

The western slope, where a good grade of domestic coal is mined, was seriously affected by the closing down of the Colorado Midland R.R., leaving a number of small towns without direct railroad connections. This situation affected a number of mines in Garfield, Gunnison and Mesa counties.

In 1917 Routt County produced 1,057,685 tons and in 1918, as seen in the table, the production shows a decrease solely due to poor railroad facilities. In the winter and spring the heavy snowfalls almost completely blocked transportation, but an efficient railroad service could have overcome this to some extent. There is a steady demand for the coal of this district in Kansas and Nebraska because of its high thermal content and its fine storing qualities, also because it is not subject to spontaneous combustion. It can be shipped any distance and stored for a long time without impairing its value. In November 1000 cars of this coal was ordered, but could not be delivered, because of a lack of cars and the existence of snow blockades.

The only drawback to the free development of the mines in this district is the lack of an efficient railway system. However, the Denver & Salt Lake R.R. officials are making strenuous efforts to improve the system, and have built adequate snow sheds, installed new equipment and relaid the tracks where necessary. It is now the hope of all concerned that in the future transportation of cars will improve.

In the northern field where the lignite or sub-bituminous coal is mined, the question of slack is a serious one. This variety of coal makes about 49 per cent. of slack. The cost of production is as high as in the other coal-producing localities, but the product sells at a lower rate. This slack, in competition with the slack of other coals, is not in demand both on account of its slightly lower heating qualities and the fact that it will not stand storing. Unless quickly sold and used, it has to be dumped and represents money lost.

Many solutions to this problem have been considered. The making of briquets is not practicable because no cheap binder is available. The great sugar plants that operate in this field and can use this low grade fuel to advantage solved the problem to some extent by storing this slack in concrete pits covered with water, removing it as needed. One hundred and ten thousand tons of lignite were thus stored in the past year. This method of storing the lignite slack in the summer season eliminates any shortage of coal that may be caused by the increased demand for cars to move farm products in the fall and winter and makes a steady market for a product that is difficult to dispose of.

PRODUCTION OF COLORADO BY COUNTIES FOR 1918, ALSO INCREASE OR DECREASE COMPARED WITH 1917

County	Total Production, 1918	Increase	Decrease
Boulder	1,306,099	28,834	.....
Delta	90,657	.....	12,591
El Paso	281,978	.....	92,642
Fremont	899,137	27,608	.....
Garfield	73,171	.....	31,437
Gunnison	647,295	.....	5,938
Huerfano	2,665,259	289,697	.....
Jackson	77,405	.....	8,884
Jefferson	120,668	.....	10,473
La Plata	137,420	.....	1,103
Las Animas	4,515,684	67,958	.....
Mesa	218,887	9,721	.....
Moffat	600	350	.....
Montezuma	797	.....	803
Montrose	422	.....	1,262
Ouray	614	.....	515
Pitkin	29,109	6,145	.....
Rio Blanco	4,6 4	.....	53
Routt	1,004,451	.....	53,234
Weld	638,978	.....	13,446
Total	12,713,237	340,313	232,381
Increase 1918 over 1917			197,932
Average number of men employed in and about the mines			14,200
Number of days worked per mine			196
Number of mines in operation			230

Most of the coal mined in Las Animas County is made into coke and is consumed at various plants in Colorado. As a domestic fuel none can be rated higher than that of Huerfano and Fremont counties, which is in great demand because of its splendid heating qualities and cleanliness.

There were no labor troubles other than a scarcity of experienced miners to add to the difficulty of the coal situation. In the northern field there was a moderate demand for the soft coal, resulting in the mines working only half time and cutting down the wages of the men. This prompted many of them to leave the state to seek better paid employment.

There were substantial improvements made at many of the mines in spite of the fact that the cost was extraordinarily high. The welfare of the employees received attention, and in many of the coal camps the living conditions were considerably improved. The rate of fatalities was about 4.7 per thousand men employed. While this is a high death rate, yet considering the preponderance of inexperienced and foreign-born men working at the mines it shows that safeguards to protect life were enforced to an appreciable extent.

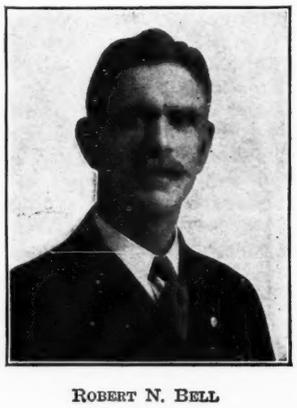
It is difficult to say what the effect will be on the industry when the various restrictions placed upon it by the war are lifted. With an overstocked market, selling prices are bound to drop. However, in common with other coal producing states, Colorado will solve the new problems and work out matters satisfactorily.

Idaho

By Robert N. Bell

Boise, Idaho

THE Horseshoe Creek coal field of Teton County, Idaho, is the only portion in the whole State of Idaho that has so far developed a commercial coal mine. It embraces a portion of the famous coal-bearing formations of Wyoming, which extend for a short distance over the border into Idaho. The Horseshoe coal field is situated on the eastern slope of the Big Hole Mountains, 12 miles due west of Driggs, in Teton County, southeastern Idaho. Driggs is an agricultural center and the county seat of Teton County, with a population of 1000 and



Robert N. Bell

the end of Teton Valley branch of the Oregon Short Line Ry. The elevation is 6000 ft. above sea level. The Big Hole Mountains comprise an L-shaped spur of the Tetons, one of the major ranges of the Rocky Mountain system. The "Grand Tetons," as they are called, have some of the steepest and most spectacular, as well as the highest peaks, in the United States. They are plainly visible from the coal property, towering to an elevation of nearly 14,000 feet.

These coal deposits have been operated since their discovery in a desultory fashion by the original claim owners and were locally known as the Brown Bear, Boise, Horseshoe and Packsaddle claims. They were held by local people without means to push the development to a point where a large tonnage could be produced. This, in connection with the long wagon haul of ten miles to the nearest important settlement, kept the output limited strictly to local demands of the nearby agricultural communities.

In December, 1917, these properties were taken over and placed under one head, by R. S. Talbot, of Spokane, Wash., who successfully developed the large magnesite deposits of eastern Washington. The area of the coal property involved in the transaction is upward of 1200 acres. It is roughly oblong in shape lying northwest and southeast along the strike of the coal seams. The workable seams so far proved are nine in number and range from 30 in. to 12 ft. in thickness. The measures are interspersed with shales and sandstones of Cretaceous age. The average dip is 60 deg. to the southwest, and the principal seams upon which development work has been done produced a remarkably clean low-ash coal, which parts readily from the top and bottom rock.

A typical analysis of several of these seams is as follows: Moisture, 3.60 per cent.; volatile, 41.50 per cent.; fixed carbon, 52.60 per cent.; ash, 2.30 per cent.; sulphur, 0.40 per cent.

The present development work is being confined to the Brown Bear seam, and it was on this 5-ft. seam that the most noteworthy development work was carried on by the former owners. The old development work consists of a 400-ft. rock tunnel cutting the seam at a vertical depth of 80 ft. From this intersection, 2000 ft. of entry has been driven and from this opening mining has produced about 50,000 tons of coal; this was removed prior to the taking over of the property by the Talbot interests in December, 1917.

As soon as the new management took control of a slope 500 ft. long with a parallel air course was sunk, and at that depth about 800 ft. of entries have been driven in the seam; the coal exposed on this entry and air course above with a 30-ft. chain pillar is to be worked by 100-ft. rooms with 100-ft. pillars between.

A modern headframe has been built and a hoist and skip installed, together with all neccessary surface improvements. At present the skip delivers 20 tons of coal per hour to the tipple, and as the underground development progresses this capacity will be rapidly increased. The coal brought to the surface is run over bars which grade it into lump, egg, nut and slack, all except the slack being delivered to a 350-ton bin. At the present time this coal is being disposed of to the ranch-

ers and others who come to the mine with wagons and haul the product away. About 7000 tons of coal was produced in 1918, all from development operations.

A main development tunnel, 9 x 7 ft. in the clear and to be 6000 ft. long when completed has now advanced several hundred feet; it is designed to intersect the whole series of coal seams at an average vertical depth of 500 ft. The portal of this tunnel is slightly lower than the present entry on the 5-ft. seam. When this seam is reached, entries will be driven and connection made with the present workings. This main tunnel is about one mile north of the present slope on Horseshoe Creek, and at this point a lower camp has been established which will be the terminal of the railway spur now under construction. When the improvements are completed the upper camp will be abandoned.

A modern tipple, capable of handling 1000 tons per day, will be built at the lower camp. A powerhouse (almost completed) contains a boiler, Atlas-Corliss engine, an alternating-current dynamo of 125-kw. capacity and a Laidlaw-Dunn-Gordon compressor; the latter for supplying air to the drills in the tunnel. There is also a ventilating fan.

A railway spur ten miles in length is under construction from the main line of the Teton Valley branch and will terminate at the tipple site. The grading on this spur has been completed to the mouth of Horseshoe Canyon, a distance of 17 miles, and track laid to this point. Bad weather has interrupted railroad construction along the canyon which, however, is not a serious problem; and it is confidently expected that the branch will be completed to the lower camp by early spring. Pending its completion, coal is being hauled on sleds from the 500-ft. slope operations to the temporary railway terminal over a good easy grade recently completed. It is expected that the daily output of the mine will soon be from 200 to 300 tons. After the cross-cut tunnel is in operation it is expected to increase this output to 600 tons per day.

There are 40 men employed of whom 15 are engaged in underground work. The underground force is to be increased as rapidly as conditions will warrant in order to get out the tonnage intended. During the past summer and autumn 30 new buildings have been constructed, which include family cabins, quarters for single men, boarding houses, store buildings and so on. A saw mill was installed to supply lumber for these buildings and most of the new buildings at the upper camp are so constructed as to be readily moved when the camp is abandoned.

The various coal seams have been tested out and the property thoroughly surveyed and proved by surface work in addition to its 500-ft. slope development. From the data obtained as a result of this work and the uniformity of the seams, for a distance of two miles along their strike, it is conservatively estimated that the coal available above the level of the long cross-cut tunnel now being driven will be in excess of 130,000,000 tons.

The future of this field is decidedly promising, chiefly on account of the geological location and the quality of the coal. Though close to the Wyoming border, high mountain ranges intervene and shut off communication and competition with this part of Idaho. It is one of the most extensively developed areas of the state, embracing as it does within 50 miles of the mine three large sugar factories using approximately 50,000 tons of coal per year and three other factories of similar capacity now in process of construction. The comparatively short railway haul from this field to the extensive Snake River valley settlements will afford a splendid local market for the output of this field; it is far shorter than from the nearest Utah or Wyoming coal mining operations, which are the only likely sources of competition. Coal famines, in this rich agricultural territory from now on, should be a thing of the past and a good market is assured for the output of these deposits, for a long time to come.

Illinois

By Martin Bolt

Assistant Director, Department of Mines and Minerals, Springfield, Ill.

DURING the year 1918 the coal mines of Illinois will probably produce a larger tonnage than ever has been produced in any year of coal mining in this state. There are a number of reasons why the production will be greater than last year, and I will give these reasons.

Martin Bolt

In the year 1917 there were in operation in Illinois 810 mines employing 80,893 men, who produced for the fiscal year ending June 30, 1917, 78,983,527 short tons of coal by working 179 days as an average.

The mines are divided into two classes, shipping and local. The shipping mines, working 215 days and employing 78,056 men, produced 77,412,054 tons. The local mines, working 154 days and employing 2837 men, produced 1,571,473 tons of coal.

On the other hand, in the year 1918 there were in operation 967 mines, employing 91,372 men, and these men produced for the fiscal year ending June 30, 1918, 89,979,469 tons. There was an increase in the number of mines in operation of 157, of which 47 were in the shipping class and 111 in the local class. The increase in the number of mines in operation does not necessarily mean that there are that many new mines; a great many are old mines reopened, and very probably when the present conditions no longer prevail they will be closed down.

The new mines that have been opened are of the large up-to-date kind, equipped with all the latest improved mining appliances. They will in nearly every instance be large producers of coal.

In addition to the increase in the number of mines in operation, the number of men employed has also increased to a large extent, notwithstanding the fact that a great many mine workers are in the service of the country overseas and have done their part toward winning the war.

The figures given below are for shipping mines only, and are nearly correct for the first ten months of the year 1918, with estimates for November and December.

The number of short tons produced was 89,325,962, and there were 88,200 employees, who worked an average of 245 days. These figures, together with the tonnage produced by the local mines, will bring the total above 90,000,000 tons; had the production of July been maintained for the entire year, the production, in round numbers, would have been above 112,000,000 tons.

In addition to the increased production the conditions of the mines of the state have been improved to a marked degree; the coal companies are taking a keen interest in matters of safety, which will surely bring a reduction in the number of mine accidents, because the mines will be made more safe.

The coal industry of Illinois did its bit during the time of the war, and it can be depended upon to do the very same thing in times of peace.

Indiana

By John Ogilvie

State Mine Inspector, Indianapolis, Ind.

COAL output in the state of Indiana during the fiscal year ending Sept. 30, 1918, broke all records for this state. There was some time lost on account of the shortage of railroad cars, which was the principal cause of throwing some mines idle more than they otherwise would have been. There were some days lost during the year on account of strikes, but these

were few. Owing to the large demand for coal in this country, the miners of Indiana stood loyally behind the Government, laid aside their petty grievances and kept at work while their differences were being adjusted. Some time was lost on account of incendiary fires occurring at several mines. All the surface plants at two mines were completely destroyed, and this threw these mines idle for about sixty days.

The production of coal for the fiscal year was 28,795,682 tons, including block and bituminous coal. This was divided as follows: Block coal, 551,184 tons; bituminous coal, 28,244,498 tons. The wages paid by the various coal companies was $39,776,916.19, making an average wage earned per employee of $1424.06 per year.

The total number of mines employing more than ten men in this state is 245, of which 51 are new operations sunk during the fiscal year. This is a large increase of new mines for this state, and everything points to a bigger production of coal in the future.

The American Coal Co. at Bicknell has the largest producing mine in this state, having produced 5900 tons in one day. This company has sunk another new mine, which is being equipped to hoist over 6000 tons per day.

More Days Worked This Year

The average number of days that the coal mines were in operation during the year was 254. This is an increase of thirty days over last year. There was a considerable shortage of men during the year, owing to a large number of the best miners joining the army.

The stripping plants and small mines, those employing less than ten men, do not come under the jurisdiction of the mining department, but the following is a summary of the production of these operations for the fiscal year.

Steam shovel mining has become an important factor in the coal-producing industry in this state. These operators maintain an organization known as the Coal Producers' Association, which has twenty-one members who produced approximately two million tons during the fiscal year ending Sept. 30, 1918. The stripping system is used where the overburden can be removed economically by steam shovels or drag lines. From 15 to 40 ft. of overburden is removed. Bucyrus shovels with 8-cu.yd. dippers and 90-ft. booms are used where stripping is heavy. Nos. 3, 4, 5 and 7 beds of bituminous coal and Brazil block coal are excavated by this method. Stripping plants are operated in ten counties in the state.

There are about 300 small mines in the state, and it is estimated that the production of these for the year was 2,500,000 tons. Most of this coal is consumed within the state. Taking the production from mines coming under the jurisdiction of the state mine inspector, stripping plants and small mines, the state had a total production for the year of 33,295,682 tons.

The general condition of the coal market will, in my opinion, continue to hold good for some time to come. The war being at an end will allow other industries to get back to their regular work of producing commodities for which there is a great shortage, owing to many factories being employed in the manufacture of war supplies.

There were 114 fatalities in and around the mines during the year. The number of tons produced per fatality was 292,067. These fatalities were from the following causes: Falls of coal, 3; falls of slate, 49; mine cars, 15; mine motors, 3; explosions of powder, 8; gas and gas explosions, 14; exploding shots, 3; mine cages, 3; falls into shaft, 3; other falls, 2; electricity, 6; railroad cars, 4; miscellaneous, 1.

The mining laws in this state are inadequate, and it is to be hoped that the coming Legislature will place on the statute books some laws that will state specifically the safeguards to be used to protect the workmen.

The movement for prevention of accidents and knowing how to protect oneself from the dangers met with in coal mines is finding favor with the miners and operators in this state. The Federal Bureau of Mines is installing a rescue car to be located at Terre Haute; also a mine rescue station at Vincennes, to be equipped with oxygen apparatus for fighting mine fires and explosions. This station will have a large motor truck, which can reach the scene of any disaster in that district in a very short time. Many first-aid and rescue teams will be organized in the mining districts, through the use of these two stations.

The Knox County coal companies have in operation a mine rescue station at Bicknell, which has two separate teams of men, who can be reached in a short time should they be required. This team has done good work all over the state in the past year in fighting mine fires, and it also helped at the mine explosion at Clay, Ky., where 62 men were killed by an explosion of gas.

The Industrial Board is using its best endeavors in assisting the Mining Department to carry out to a complete development the safety movement.

Iowa

By L. E. Stamm

Secretary, Iowa Mine Inspectors

COAL-MINING conditions in Iowa were good throughout almost all of the year 1918, better, in fact, taken as a whole, than for a number of years past. As a usual thing the Iowa mines work fairly well during the fall and winter months of the year. With the coming of spring the small local mines of the state shut down, to again reopen some time in August. The larger mines, and especially those having railroad connections, and supplying railroad coal, work through the summer, but not with as lively a business as in the winter, when commercial coal is shipped in addition to the railroad trade.

In 1918 the mining business was good during the months of January, February and a part of March; then there began to be a slump that may be traced to two conditions confronting the trade just at that time. The first was the warm weather prevailing in March, which caused a falling off in the commercial coal trade, and the second was that many of the contracts for coal for railroad use expired in March and the roads refused to enter into contracts paying the Government price for coal at the mouth of the mines.

The operators of the state refused to sell for less than the Government price. The result was that no contracts were made for some time, and many of the mines of the state were idle a part of March, all of April, and some of them until well along in May. Mines in other states were working, and this caused a large number of miners from this state to leave for other mining fields. It is estimated that between 1200 and 1500 miners left the southern Iowa fields for this reason.

Prices Higher Than Before

Iowa used to be one of the favored states, getting her coal at a low price by reason of having so many mines within her borders. During the war all this has been changed, until present coal prices are the highest in the history of the state. Beginning with the prices fixed at mine mouth by the Government in August, 1917, the price of coal has been advanced on several occasions. An advance was given to the miners and other mine workers by the Washington agreement, which became effective in this state on Nov. 1, 1917. The Government allowed this advance to be added onto the cost of coal at mine mouth, and later the fuel committee fixed the price of coal placed in the bins here in Des Moines at $5.65. A general freight rate advance became effective in June, 1918, but no advance in coal was made here until September following, when the fuel committee fixed the price for Des Moines, put in the consumer's cellar, at $6.15 per ton. This is almost double the price paid for the same kind and grade of coal three years ago.

The year 1917 was a banner year in the production of coal in this state. Previous to that time the highest production of the state had been but little over seven million tons of coal per year. In 1917 this was increased almost two million tons, the actual figures for 1917 being 9,049,806 tons produced, while 15,464 men were given employment in and around the mines of the state for that year. This increase in tonnage was made with but few more men employed than in former years, and was possible because the mines were able to keep going the most of the summer months.

Had the mines of the state been able to keep busy during the months of

March and April, 1918, I am sure that the production of coal during the past year would have compared favorably with the amount produced in the banner year 1917. Taking everything into consideration, however, I am inclined to think that the 1918 production will be slightly less than that of 1917. I believe the returns will show about the same number of men employed in the mines. The actual figures as to production, men, etc., will not be available until about Feb. 1, as statistical blanks are sent out from this office Jan. 1 and the operators are given 30 days under the law in which to file their reports.

Labor conditions were exceptionally good in and around the mines of the state in 1918, and but few suspensions of mine work were caused by strikes or disagreements. These were chiefly on account of differences as to the meaning and terms of the agreement between the miners and operators, as affecting some particular work done in the mine, or some action taken either by the miners or operators.

Hard to Predict Future of Coal Industry in State

As to the outlook for coal production in this state for 1919, so many things have entered into the production and distribution of Iowa coal the past few years that it would be hard to make a sensible prediction for the coming year. Of one thing we are assured, and that is that the mines of the state are in good condition for future production. Since the war is over and the Government has ceased to control the output and distribution of coal as in war times, fuel from other states may now come into this commonwealth, and this may have the effect of lessening the production of Iowa coal.

Of another thing we are assured by the operators themselves, and that is that since the Government has exercised control in a measure over the mines of the state, the operators have a much better system of cost accounting and know better now the cost of coal production. This will be of value to them in the future. The year 1918 has seen a number of new operations in the state, and all these new mines are being well equipped for future production. We can therefore hope much for the coal business in Iowa for the year 1919.

Michigan

By M. D. King
Chief Assistant, Department of Labor, Lansing, Mich.

THE output of coal from the mines of Michigan during the twelve months ending Nov. 30, 1918, amounted to 1,501,053 tons. This included 154,303 tons of pick-mined coal and 1,346,750 tons of machine-mined coal. The details of operation are shown in the accompanying table. (See top of the next column for table.)

SUMMARY OF MICHIGAN COAL MINING STATISTICS FOR 1918

Number of mines in operation during the year	21
Average number of men employed	2,137
Average number of hours worked per day	7.8
Average number of days worked per month	22.4
Average daily earnings of each employee	$5.45
Aggregate amount of wages paid	$3,113,028.83
Total number of kegs of powder used	16,403
Aggregate tonnage of pick-mined coal	154,303
Aggregate tonnage of machine-mined coal	1,346,750
Total number tons of coal mined	1,501,053
Aggregate cost of output	$5,022,151.96
Average cost of coal per ton	$3.35

Missouri

By George Hill
Chief Mine Inspector, Bevier, Mo.

THE year 1918 breaks all records in Missouri's history in the production of coal. The total output reached approximately 6,000,000 tons, which shows a gain of 500,000 tons over 1917. This tonnage was produced in 32 counties, Macon, Lafayette, Barton, Adair and Ray counties being the chief producers.

Missouri is unfortunate, in comparison with some adjoining states, as our largest coal beds do not exceed over 5 ft. in thickness, and sometimes our largest annual tonnage comes from the Lexington seam, which averages from 20 to 22 in. in thickness. The mines have worked full time and practically every mine is in operation.

The production was curtailed in some respects in many counties on account of the shortage of labor, as many of the miners have joined the colors. The operators and miners have worked in harmony this year, as there has been no labor disputes and both sides seemed to agree that it was their patriotic duty to produce coal.

The outlook for 1919 appears good, as numerous new mines will be in operation. With the return of the miners Missouri should produce more coal in 1919 than in any previous year of the coal-mining industry of the state.

Montana*

COAL production in the State of Montana for the year ended June 30, 1918, was the largest in the history of the state, in spite of some adverse influences which were experienced in the shape of a scarcity of labor and a shortage of cars. The increase was due to industrial activity, the demand being far in excess of the supply at all times.

During the year in question many new mines, mostly wagon operations, were opened, while some old ones temporarily abandoned were reopened and at present are producing coal.

The only labor trouble of any importance occurred at the mine of the Republican Coal Co. at Klein, in Musselshell County. At this mine the men were on strike for a period of about ten weeks. This reduced their output for the year by about 100,000 tons. With the exception of this strike, the year in question was free from labor troubles and as a general rule the relationship existing between the employer and the employee was pleasant, each striving to adhere to the conditions and obligations that all had assumed.

No great disaster, such as a mine explosion, occurred at any of the mines of the state. This avoidance of disaster has been due to the constant vigilance and care of the foremen, whose duties require them to oversee the welfare of the miners under their charge. There have been fatalities—too many of them—but just as long as coal mines are operated, injuries and fatalities will occur. All that can be done is to safeguard the workmen as far as it is humanly possible to do so. This has been done, and the Department of Mines is receiving the active coöperation of the management of the various mines throughout the state. Many operators not only coöperate, but also take the initiative, devising means for reducing injuries and fatalities. This is particularly true of some of the larger companies that are sparing no expense to bring about conditions of safety in their mines that are decidedly worthy of emulation.

Twenty-one fatal accidents occurred in the coal mines during the year from July 1, 1917, to June 30, 1918.

*Abstract from Annual Report of ex-State Mine Inspector John Sanderson.

SUMMARY OF COAL-MINE OPERATIONS OF MONTANA

Number of mines reporting to the Mines Department	88
Machine operators employed	228
Loaders	1,032
Miners	1,496
Inside daymen	1,151
Outside daymen	839
Total number of men employed in and about the mines	4,746
Total tonnage produced	4,515,414
Total number of lives lost	21
Tons produced per life lost	215,020
Number of men employed per fatal accident	226
Number killed per thousand men employed	4½
Number of kegs of powder used	101,913
Tons of coal mined by machine	1,961,743
Tons of coal mined by hand	2,553,671
Per cent. of coal mined by machine	43%
Per cent. of coal mined by hand	57%
Total value of mine output	$9,525,386

New Mexico

By W. W. Risdon
State Mine Inspector, Albuquerque, N. M.

A YEAR of unusual activity in coal mining was witnessed in New Mexico in 1918. No strikes or labor disturbances have occurred during the year. The demand for coal has been unlimited. The railroads have given the mines excellent service. There has been but little loss of time on account of a shortage of cars. The scale of wages paid to the mine workers has been the highest ever known. Yet notwithstanding these favorable conditions, the state has fallen behind the production for the year 1917. The decrease totaled fully a half million tons less than the mines are capable of producing.

The output for the year 1918 amounted to 4,037,726 short tons. Of this 47,050 tons were anthracite; 3,229,387 tons bituminous; 761,289 tons semi-bituminous. The value of the coal mined amounted to $9,876,361. In operating the mines 40,506 tons were used; 1,126,935 tons were shipped to the coke ovens, and 2,870,265 tons were sold. The coke ovens made 607,241 tons of coke, valued at $2,448,494.57.

The number of men and boys employed at the mines were: Miners, 3070; day men underground, 837; boys underground, 45; 876 day men and 45 boys were employed on top; 315 men were employed at the coke ovens. There were 1,209,401 tons of coal cut by machines and 2,828,325 tons pick-mined.

Making an analysis and comparison of the reports of the large companies for the years 1917 and 1918, and reducing them to a like basis, we find the average loss per man per day for the year 1918 is 0.83 ton. This—including only the three largest companies—amounts to over 300,000 tons. The companies have been short of men and have been compelled to hire everybody who came looking for work. The high scale of wages paid at the mines, together with the fact that coal miners were placed in a deferred class by the draft board, caused many men to seek work in the coal mines.

W. W. Risdon

Many of these men not only had no experience in the mines but were indolent as well. There were enough of these shiftless and inexperienced men, together with a few Austrians, who worked only enough to make expenses, to cut down the production and cause the loss hereinbefore mentioned. Daily records kept of the men who report for work in the mines show that for nine months there were from 25 to 35 per cent. of the men laying off every day.

In addition to large reinvestments of earnings into permanent equipment, thus making for efficiency, the large companies are devoting much time, attention and money to bettering the social and living conditions of their employees. During the year several hundred thousands of dollars have been spent in the mining towns in renovating, repairing and repainting the dwellings; in removing old shacks and replacing them with comfortable houses; inclosing the yard of each dwelling with a fence; in building coal-houses and providing garbage cans and making a general clean up of the camps.

The living conditions of the average mine worker in these towns is equal—if not superior—to the living conditions of the workingman in the large towns of the state, and far ahead of anything New Mexico has to offer in its country districts. No additional revenue will be derived by the companies for the improvements mentioned. Comfortable homes will lessen the desire to move about and will work for a more friendly feeling toward the employer. When men are contented they have a higher efficiency than when they are dissatisfied. The respect and confidence of its employees is the biggest dividend paying asset a company can have.

North Dakota

By W. H. Robinson
State Engineer, Bismarck, N. D.

THE estimated coal production of North Dakota for the calendar year 1918 is about 1,000,000 tons. This estimate is based on the assumption that the same increase over that of the previous year will be shown in 1918 as was attained in 1917. The forecast for the coming year is difficult and uncertain. It is considered doubtful if the production for 1919 will exceed that of 1918 to any great extent. This belief arises from the scarcity of labor and the high wages demanded by what miners are available. Much, will however, will depend upon how rapidly and in what numbers men are released from the army.

South Dakota

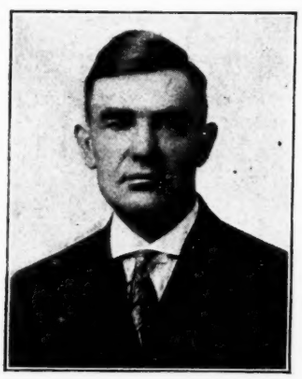
By Otto Ellerman
State Mine Inspector, Lead, So. Dak.

AS A coal-mining state South Dakota has, as yet, gained but little prominence, and for the year just ended the annual production was 10,100 short tons. The entire output was used in the immediate vicinity of the mines as a domestic fuel, no railroad shipments being recorded. The annual output shows a decrease over the previous year, the decline being due to a shortage of labor. With wages ranging from $4 to $6 per day, the operators experienced difficulty in obtaining satisfactory help and in some instances were forced to suspend work. With the return to normal times this barrier to the development of this natural resource will be removed and steady increases may be anticipated.

The mines, with the exception of those in Dewey County, are situated so far from railroad transportation as to make shipments to other localities impractical. This condition limits the output to an amount that can be used locally. Until railroads enter the area, no great progress will be made in coal mining. The coal is a lignite that disintegrates readily upon exposure to the air and would not withstand being transported any considerable distance. This, however, can be overcome by briquetting; tests have shown that this can be done with success and at a profit.

The field is a large one, and the estimate by the U. S. Geological Survey places the amount of minable coal in Harding and Perkins counties alone at over one billion tons. In addition to these counties, coal is found in commercial quantities in Meade and Dewey counties. Near Isabel and Firesteel, in Dewey County, the coal beds have an average thickness of 6 ft. and have been opened by entries several hundred feet in length.

To determine the extent of these deposits drilling has been done, and the figures obtained indicate over one million tons as available. The Lindt mine at Firesteel and the Robbins mine at Isabel have near railroad connections, the road being only two miles distant. In past years coal was hauled to the railroad and shipped, but during 1918 the scarcity of labor prevented this. The coal is clean and sells at the mine for $4 per ton.



Otto Ellerman

At the November election in this state, Amendment F to the State Constitution carried by a large majority. This authorizes the state to engage in the coal-mining business and for that purpose to acquire by purchase or appropriation all necessary lands, structures, easements, tracks, rights-of-way, equipment, cars, motive power, implements and materials. The amendment further provides that the state may pledge its credit to secure funds for this purpose. No expenditure of money, however, shall be made except upon a vote of two-thirds of the members of each branch of the Legislature.

To investigate the coal possibilities within the state, a commission was appointed and its report will be made to the next Legislature, which meets during the early part of 1919. The action of the Legislature in voting funds for the development and commercializing of the coal deposits will depend largely on the report of the commission.

The deposits are of sufficient size to warrant operations on a large scale, and with railroad connections and a briquetting plant, there is no good reason why South Dakota cannot be supplied with an economical fuel from its own fields. There were no accidents attributable to the coal-mining industry during the past year.

Ohio

By Jerome Watson
Chief Deputy and Safety Commissioner of Mines, Columbus, Ohio

THE coal industry in Ohio during the year that has just closed reached a magnitude never before attained. Ohio produced 41,677,986 tons of coal during the year 1917, and reports collected from the various coal-producing districts indicate that there will probably be an increase of 20 per cent. in production for the year 1918, bringing the tonnage to a figure something near 50,000,000 tons.

Lake shipments alone amounted to 29,388,242 tons from April until navigation closed Dec. 4. This represents cargoes amounting to 28,153,317 tons and 1,234,925 tons for fuel, shipped from the docks of Toledo, Sandusky, Huron, Lorain, Cleveland, Fairpoint, Ashtabula, Conneaut and Erie, and transported to these docks over the Baltimore & Ohio, Hocking Valley, Toledo & Ohio Central, Pennsylvania, Wabash & Lake Erie, New York Central and Delaware & Lackawanna railroads.

Unusual Demand for Fuel

The demand for fuel was unusual, and every effort was put forth to meet it. Of material aid in this respect was the fact that there was no such shortage of cars as was experienced during 1917. In the early part of 1918 such a shortage made itself felt pretty generally over the state. This was most acute in the Hocking Valley, and was the cause of the mines of that district averaging only about three days a week for the first three months. However, the evolving of the "zone system" greatly facilitated the supplying of cars, and during the summer and fall most of the districts had a car supply of from 80 to 100 per cent., while practically all districts reached a supply of 100 per cent. during the last two months, when the signing of the armistice closed many of the mines.

Another factor to consider when viewing the fact that the tonnage will probably not reach a figure so high as anticipated, is the shortage of labor due to many of the miners being of military service age. While many old mines that had been abandoned for years were reopened, and hundreds of small mines were opened up during this period of unusual activity in the coal business, it is estimated that there were no more men employed in 1918 than in 1917, if as many. In 1917 the mines averaged 51,286 employees. In spite of this the deputy mine inspectors of this state reported over 1600 mines operating during the last year.

The past year's record is indisputable evidence of the patriotism of the Ohio miners, for during the critical period through which we have just come, when the slogan was always "Produce More Coal," there were no labor troubles. True, the fixing of prices by the United States Fuel Administration left less cause for disagreement, but the customary petty disputes were noticeably absent.

The stripping operations of this state are coming to take an important place in the coal production. Figures for 1918 will show a marked increase over 1917, when more than 1¼ million tons were produced in this manner.

Ohio mines were singularly fortunate in having experienced no serious explosions or mine fires through the pressure of producing a high tonnage. While any accident causing a single death or injury is regrettable, the total number of such accidents reported for the year 1918 was in no way exceptional in proportion to the output, the total number of fatalities being 147. Of these, 91, or 62 per cent. of the entire number, were caused by falls of roof. Thirty of the total number of accidents occurred in Belmont County. There was quite an increase in the number of deaths due to this cause as compared with 1917, when 62, or 55 per cent. of the total number, were due to falls of roof—the total number of fatalities for 1917 being 112.

There was a decrease of four in the number of deaths due to mine cars, the total number being 17. There were eleven deaths from miscellaneous causes, an equal number having occurred from such causes in 1917. Six were the result of falls of coal, an increase of two; five were attributable to motors, an increase of three; six to explosives, an increase of one. The remainder of the fatalities occurred as follows: Three from railroad cars, two from gas, two from electricity, two from shots blowing through rib, one from a mining machine and one from a premature explosion.

Increase Shown in Output

All of the larger coal-producing counties showed increases in the number of fatalities. Belmont County reported the greatest number—43, as compared with 31 in 1917; Jefferson County showed 22, an increase of 4; Guernsey County which reported 15 fatalities in 1917, had an equal number in 1918; Athens County, 14, this being an increase of 2; Perry County, 14, an increase of 8, and Tuscarawas County, 10, an increase of 2.

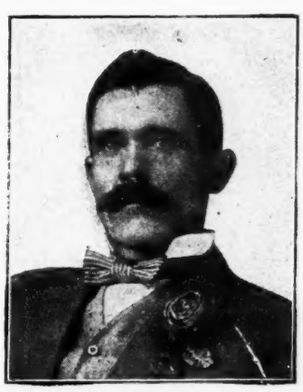
Undoubtedly the closing of the year witnessed the final abandonment of a great number of the small mines, but if the present car situation continues, with the miners returning from military service, there is no apparent reason for a falling-off in the coal mining activity for the coming year.

Oklahoma

By Edward Boyle
State Coal Mine Inspector, Cumberland, Wyo.

THIS country's participation in the great conflict in Europe enabled the mines of Oklahoma during the year ending June 30, 1918, to work almost continuously. Assured of prosperity, operators made many substantial improvements on their properties. The miners also showed great loyalty toward the Government by overlooking many petty differences, and as a result the numerous shutdowns caused by local troubles, which prevailed before the war, were almost entirely done away with. The production of coal was thus greatly increased.

But a peculiar condition exists in Oklahoma, one that does not exist in the old coal-mining states and one that has retarded the mining industry to a great extent. The coal area being largely on Indian lands was segregated by the Government and has been leased to the operators of the state through the Secretary of the Interior on a royalty basis. Several years ago the Secretary of the Interior decided that it was unwise to make any more leases, and as a result there are thousands of acres of coal in the State of Oklahoma as yet undeveloped. Congress, however, eventually provided for the sale of coal and asphalt Indian lands, and many tracts have been sold recently while the rest is subject to sale at any time.



Edward Boyle

This is going to bring about the rapid development of the coal fields of Oklahoma, and will be the means of this state forging to the front and coming to be one of the foremost among the states of the Union in the production of fuel. There is a vast area of the state underlaid with a good grade of bituminous coal.

The mines of this state, generally speaking, generate large quantities of gas and a dust of a highly combustible nature. This requires strict legal regulation and supervision by the Mining Department in order to safeguard the lives of the miners. I think that under the conditions of the past year and the greater carelessness arising from the rush of business, accidents both fatal and nonfatal are naturally to be ex-

pected Under these conditions the public and the Mining Department should feel fortunate that under the existing circumstances, the state was able to mine 4,489,064 tons of coal with a total of fatal accidents numbering only 33. Concerning these fatalities, the reports show that seven men were killed by falling rock, five by runaway trips, one fell down a slope, six were killed by dust explosions and five were burned by gas. The other fatalities were caused by accidents of a minor nature, such as windy shots, etc.

The chief inspector does not desire to take unto himself all the credit for this enviable record. The coal operators are entitled to share in it because of the way they have coöperated with the department in this work; the district inspectors also were largely instrumental for the successful way the industry has been conducted during the year.

The tonnage produced in the year ending June 30, 1918, and the different grades of coal made are as follows:

Lump	633,688
Nut	180,035
Pea and slack	468,841
Run of mine	3,206,500
Total	4,489,064

The gains in the different grades of coal over the year ending June 30, 1917, are as follows:

Lump	84,911
Nut	48,319
Pea and slack	14,702
Run of mine	479,435
Total	627,367

Pennsylvania

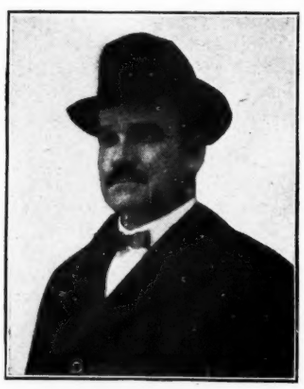
By Frank Hall
Deputy Chief, Department of Mines, Harrisburg, Penn.

According to most careful estimates, the production of coal in Pennsylvania in 1918 will reach about 272,373,714 net tons, of which 99,514,334 net tons were anthracite and 172,859,380 net tons bituminous. The coke production will probably be 24,000,000 net tons. The number of employees in the anthracite region was 147,868 and in the bituminous region 172,600.

The number of fatalities during the year was 1009, of which 541 occurred in the anthracite mines and 468 in the bituminous mines. In 1917 the production was 271,519,710 tons and the number of fatal accidents 1075. The record of the past year both as to production and accidents is one to be proud of, and this is particularly true regarding the fatalities. The usual dangers that meet the mine workers from day to day were increased by the number of unskilled men employed and by the frantic haste to produce coal, with the consequent carelessness on the part of the miners.

The Federal regulation of mining operations and of practically all the other branches of the coal industry has not, although a most radical innovation, proved an unmixed evil. Indeed the violent protests at first heard when the Government made known its intention to control and supervise the trade to a certain extent have been superseded in some quarters by expressions of positive approval. Perhaps the experience of the past two or three years may demonstrate the wisdom of closer relations between the Government and the business interests.

One of the results of the war, so it is predicted, will be a closer union between labor and capital. There seems to be a trend toward mutualism, but just what the outcome ultimately will be no one can tell. War is a leveler of all distinctions, at least temporarily, and it is probable that employers and employees having reached, amid the hardships of war, a juster and fairer view of their relations to one another,



Seward E. Button
Chief, Pennsylvania Department of Mines

may in the future work together with less of the antagonism that in the past has militated against competency, efficiency and social harmony. The great fact should be more generally apprehended that their interests are identical.

Profits from investment for the employer and compensation for service for the employee are still fundamentally necessary in the coal trade, as in other fields of endeavor. Beyond this, however, there should be consideration for the needs of the community. A fair profit to the operator, a fair wage to the employee, a fair price to the consumer (all of which is possible), and the coal mining industry would be conducted to a much greater degree than ever before in conformity with the Golden Rule—the rule that must sooner or later be the guiding principle in all business transactions.

The year just past has been one of particular stress in all branches of business, and the coal industry has been no exception. The war made an imperative demand for a maximum production of fuel, but at the same time depleted to a great extent the number of mine employees. However, notwithstanding the almost insurmountable difficulties encountered, the operators and employees both bent their energies to the fulfilment of the great task laid out for them, and the result attained in the way of production stands as a testimony to their loyal, patriotic, untiring efforts.

In addition to the shortage of labor the uncertainty of car supply was a potent factor in keeping down production. The epidemic of influenza also interfered greatly with output. But these difficulties will be helpful in causing greater activity at the mines in the future.

It is gratifying to know that the general readjustment from war to peace conditions is being made with much less friction and disturbance than was expected. In fact, few operations have closed down and few of the working forces have been reduced. Working overtime, an abnormal phase that has characterized the industry during the year, has been eliminated, and operations may now be expected to proceed with the usual celerity.

The cancellation of war contracts lessened to some degree the need of coal for many of the industries directly concerned in war work, but the delayed work of many manufacturing

PRODUCTION OF ANTHRACITE COAL IN PENNSYLVANIA IN 1918, FATAL ACCIDENTS AND COAL CONSUMED AT MINES

District	Production, Gross Tons	Employees	Fatal Accidents	Coal Consumed at Mines Net Tons
1	3,307,766	5,963	16	263,150
2	3,149,169	6,171	15	305,476
3	3,371,694	5,616	18	373,110
4	2,281,578	5,173	20	235,202
5	3,586,370	6,222	30	198,098
6	3,655,069	5,945	19	288,708
7	2,783,122	5,629	17	157,941
8	4,763,319	8,280	24	472,000
9	3,026,478	5,308	29	337,996
10	2,951,304	5,614	27	258,583
11	3,987,060	6,027	14	351,106
12	3,736,225	7,615	20	300,000
13	4,233,082	6,741	34	383,404
14	4,297,738	7,032	37	342,431
15	4,649,249	6,125	22	484,878
16	3,178,866	4,383	22	310,144
17	4,690,427	5,928	24	361,840
18	4,002,996	5,681	16	415,350
19	2,603,500	4,798	16	418,500
20	3,415,531	5,770	16	459,339
21	4,351,914	6,744	24	475,000
22	4,668,606	6,582	24	646,823
23	2,825,052	5,297	25	407,769
24	2,885,969	4,924	15	314,749
25	2,450,000	4,300	17	500,000
Totals	88,852,084	147,868	541	9,061,591

PRODUCTION OF BITUMINOUS COAL AND COKE IN PENNSYLVANIA IN 1918, FATAL ACCIDENTS AND COAL CONSUMED AT MINES

District	Production, Net Tons	Employees	Coke Production, Net Tons	Fatal Accidents	Coal Consumed at Mines, Net Tons
1	5,876,816	6,500	586,336	16	72,000
2	6,155,882	5,776	1,914,580	14	145,266
3	3,920,000	5,390	.....	11	145,000
4	4,360,139	5,121	131,715	12	151,426
5	6,850,000	6,750	3,285,000	20	150,000
6	5,252,559	4,572	1,115,352	14	87,310
7	5,350,000	4,890	.....	21	100,240
8	4,899,000	6,120	.....	6	54,000
9	6,650,000	6,710	2,663,500	12	180,000
10	4,073,456	4,934	10,000	8	93,000
11	7,682,015	6,710	2,676,819	11	185,445
12	5,500,000	5,100	455,299	20	200,000
13	3,750,000	3,250	.....	8	40,000
14	4,500,000	4,300	.....	16	100,000
15	5,512,500	6,889	26,000	10	86,000
16	9,200,000	8,300	4,600,000	34	200,000
17	5,338,948	5,666	.....	15	9,611
18	5,250,000	7,525	150,000	18	220,000
19	6,750,000	5,460	26,500	20	200,000
20	4,830,000	5,425	.....	16	100,000
21	7,030,683	6,590	198,750	23	278,440
22	4,472,421	3,540	92,705	9	133,342
23	7,400,000	6,900	2,500,000	18	170,000
24	5,908,464	5,960	.....	13	80,406
25	5,517,500	5,396	.....	15	90,500
26	5,473,300	4,880	.....	25	65,680
27	5,850,000	5,000	2,245,000	13	72,000
28	5,694,697	5,500	22,000	9	240,000
29	6,911,000	5,796	.....	23	120,000
30	6,900,000	7,650	395,000	18	140,000
Total.....	172,859,380	172,600	23,094,556	468	3,909,666

concerns that was put aside to make way for manufacture for the Government will create for a considerable time, perhaps for several years, a heavy demand for coal.

There is, however, a difference of opinion as to the immediate future of the trade. Some of the state inspectors and some of the operators look for a continuance of the present heavy output, while others are of the opinion that our home industries, no matter how active they may be, cannot absorb the tonnage that has been consumed under war conditions. It remains a fact, however, that the many industries that were practically eliminated during the past two or three years, in so far as nonwar materials were concerned, will resume their usual line of manufacture with a greater energy and force than ever before. This will certainly mean a demand for fuel.

Unquestionably the labor situation is one of great concern. There may be a shortage of labor owing to the fact that the miners now in the service of the army and navy will probably not be released for months to come. And if the foreign countries should find it desirable to keep their citizens at home, and therefore stop migration to this country, the greatest source of labor will have been eliminated. In some parts of the mining region many of the men are anxious to return to their native lands to see the destruction that has been wrought by the contending armies, and to get a first hand acquaintance with the new conditions thay are led to expect will exist. Many of these men may never return to this country. It may be that the number of immigrants for some time to come may not exceed the number in 1917 and 1918. In the former year this was 295,403, and in the latter, 110,618. These figures present a marked contrast to those of five years earlier, when the number was 1,218,480.

Another element of uncertainty is the wage question. At present the miners are receiving high wages. Any reduction in their compensation before the necessities of life have been reduced might cause serious dissatisfaction and bring about an unsettled condition of labor that would be decidedly detrimental to coal production.

Texas

By Bruce Gentry
State Inspector of Mines, Rockdale, Texas

THE production of coal in Texas during the year 1918 differs little from the records of previous years, being about 1,500,000 tons of bituminous and 1,300,000 tons of lignite coal. The number of bituminous mines in operation was 18, and of lignite 38. One new bituminous mine was opened and two were abandoned; ten new lignite mines were opened and five abandoned.

Progress of development of the bituminous fields is very slow, and the present outlook is that few new mines will be developed in the near future. One of the largest producing companies operating in the northern part of the state has developed a large oil field adjacent to its coal lands. Naturally the production of oil is more lucrative than that of coal, and this condition does not tend to boost the coal industry in this section.

The lignite industry is progressing rapidly and the outlook is that many new mines will be developed during the coming year. One of two strip-pit mines are being contemplated, these to be located near Rockdale in Milam County. There is here considerable territory where the overburden is shallow.

Some of the larger power companies are making investigations and studies of different points along the lignite formation with a view toward locating a large central plant for distributing power over transmission lines to different parts of the state.

The fuel shortage which has made it impossible to secure bituminous and anthracite coal in some parts of the state has led to the use of lignite as a domestic fuel, and the results have been satisfactory, as people have found that the lignite is a good fuel for domestic use. This introduction to the use of lignite is doubtless a good thing for the people, as the principal fuel deposits of Texas are of these coals and it will be necessary to look more each year to lignite as a fuel for all purposes.

The operators and miners have coöperated with the Government in increasing production and in delivering cleaner coal as requested for war needs.

Texas has been practically free from strikes during 1918. There has, however, been considerable labor shortage in both the bituminous and lignite fields. Some mines have suffered from car shortage.

The mines of the state have continued their good record for a small number of fatal or serious accidents. Better methods of mining are being adopted at some of the mines, but at many there is room for improvement. The outlook is that all mines will be active during the coming year.

Utah

By A. C. Watts
Salt Lake City, Utah

UNLIKE 1917, the year 1918 has had few unusual or exciting incidents which influenced the coal industry in Utah. With the beginning of 1918, the excitement attending the entrance of this country into the world war had given place to a grim and steadfast purpose to do everything possible to help win the conflict, and our miners had settled down to work in earnest.

The mild fall and early part of the winter of 1917 had permitted a steady flow of coal and coke to the markets, and when on Jan. 8, 1918, winter began in earnest with heavy snowfalls, the domestic consumer, heedful of repeated warnings, had a goodly supply of coal on hand, and the retailer had coal in his yard. But, having ever before him the tales of severe shortage and suffering in the East, which was bound in an arctic grip, our local fuel administrator gave orders for heatless nights which resulted in many good people going to bed early with their socks on and the relinquishment by many of their cheerful grate fires. The attention of office men was also called to the wasteful habit of having windows open in the office to lower the temperature instead of shutting off the steam. Unfortunately, that was the only way the poor clerk had to get fresh air.

As a reward for our sacrifices, coal came from the mines in an uninterrupted stream, and in three weeks the fuel administrator rescinded his heat-

less night order and coal dealers began to solicit business. By the middle of February the mines were running only two-thirds time. With the return of spring, the fuel administrator began urging the consumer to start storing for the coming winter, without at first meeting with much response. To the coal operator, it was important that the market be maintained so that the mines could be kept working full time, for in the spring quite a large proportion of the miners become restless and with high wages all over the country they were not content to remain idle part time and have their earnings reduced.

Mindful, however, of the past and apprehensive of the future, the domestic consumer and many industries began early in the summer to store coal, all except certain railroads. More care and intelligence has been exercised in storing large quantities of coal because of dearly bought experience in the past. When fall set in, and this year winter started early in November, almost everyone who could had from 50 to 100 per cent. of his season's coal stored in the bins, and dealers had a good supply on hand. Such universal storing was done that in October the mines commenced to have idle days and there were many cars of unbilled coal on hand.

Now that the war has ceased and the tremendous demands of war industries for fuel have been curtailed and even stopped, there seems no reason why there should not be an ample supply of coal for all normal demands in the intermountain region. Up to January, 1918, there had not been a time for 16 consecutive months when the established operators were caught up with their orders. The situation at the end of this year is much different, and the operators are now looking for new business.

No Disasters During the Year

Fortunately there were no disasters in the mines of the state during the past year. In one important mine the coal in an old part of the workings took fire by spontaneous combustion, and although strenuous efforts were made to load it out, it finally became necessary to seal off that portion of the mine. The area affected was near a district in which in times past the coal had been burned out, and there was considerable residual heat remaining in the strata. Earlier operators of the property had not left sufficient pillars in their advancing work and had not pulled these pillars in a systematic way. The result was a considerable sloughing of the pillars remaining, which caused the broken coal to pile up around their bases to a depth of several feet. With temperatures of upward of 150 deg. F., spontaneous combustion occurred.

The method of allotting railroad cars during 1918 has been the same as followed during the previous year—it is called the idle hour method and was described in the columns of *Coal Age* last January. The car supply throughout the year has been exceptionally good—much better than in 1917.

For the fiscal year ending Nov. 30, the production of coal for the state was 5,175,813 tons, as against 4,036,069 tons for the fiscal year ending Nov. 30, 1917, or an increase of 28 per cent. Apparently the increase is due to approximately a 20 per cent. growth in production of the older mines and 8 per cent. due to new mines and small operations. No new properties of any consequence were opened during the year.

Exact figures for the first ten months of the calendar year and approximate and estimated figures for November and December show that the total production for the calendar year 1918 amounts to about 5,302,070 tons. This includes 756,460 tons made into coke.

Hard to Keep Forces Intact

It has meant strenuous effort on the part of the operators to maintain an adequate force of men in the mines. In the main coal producing districts of the state, those of Carbon County, the coal miners constitute the greater part of the population. The War Department gave no deferred classification on the grounds of industry, and, as stated before, patriotism ran high in the camps. Because of the young men being drafted or enlisting, specialized work such as driving, machine running, mechanical and electrical work suffered. Construction work was extremely difficult to prosecute efficiently, as many skilled mechanics had left for the cantonments, shipyards and other direct war work. From one company employing about 2200 men, 182 entered the service of the United States.

However, a study of the average number of men working for this company shows that it managed to maintain a larger force than in 1917. This was largely due to efforts made to secure men, but the high wages paid, good living and working conditions and prospects for steady work undoubtedly exerted a great influence. The same conditions should hold true for the whole district.

The turnover for this same company was about 100 per cent. as against 107 per cent. during the previous year. A large turnover of course affects the efficiency of an organization besides being directly the source of great expense.

The curves of average production per miner and per man employed in and around the mines shows a decrease from last year, and its steadily declining curve for this year. This is undoubtedly due to the large turnover for both years, but it may also arise from the increased wages the men earned.

The prospects for 1919 are not very clear. The mines of the state can easily supply all demands and with steady work overproduction instead of a shortage is to be feared. New properties opened in Wyoming and Idaho will increase competition which, if pushed to the limits reached in past years, will mean hard sledding to the weaker organizations.

Virginia

THE estimated production of coal in the State of Virginia for the calendar year 1918 was 10,100,000 tons. The total number of mines in operation—drift, slope and shaft—was about 313. The total number of fatal accidents occurring in the mines during the fiscal year ending Aug. 31, 1918, was 41. These arose from the following causes: Falls of roof, coal slate, rock, etc., 23; falls of top coal, 2; mine cars and locomotives, 8; suffocation from gas, 1; explosives, 3; electricity (shock and burns), 2; other causes, 2. The total number of all accidents, fatal and otherwise, entailing the loss of two weeks' time or less was 887. Permanent disabilities numbered 7, while the number of men hurt but losing less than two weeks' time amounted to 546.

Washington

By James Bagley
State Mine Inspector, Seattle, Wash.

DURING the first ten months of the year 1918 the coal mines of the State of Washington produced 3,488,008 short tons. This, with the estimated tonnage for November and December, will make the output for the state about 4,200,000 net tons for the calendar year 1918. This is the largest output this state has yet had and is an increase of about 200,000 tons over 1917.

The largest production was recorded in the month of August, when there was 137,343 days of labor performed, an average of 5430 men working 25.3 days and producing 379,965 tons for the month.

It is estimated that 95,000 tons of coke was produced at the mines in 1918, or about the same amount as in the previous year. This does not include the coke produced at the plant of the Seattle Lighting Co., located at Seattle, Wash. Fifty-seven mines and openings of all kinds operated during the year, with an average of about 5800 men employed, this being an increase of 500 employees over the previous year. They worked an average of 270 days.

While the production during the past year was the largest the state has had, it could have been increased if the market demanded it. A shortage of labor reduced the output at some of the mines during the summer, due to the large number of men drafted into the army and to many of the mine employees securing employment at the shipyards on Puget Sound. In the closing months of the year no labor shortage was reported.

The mines of the state are operated under agreement with the United Mine Workers of America. No serious labor trouble occurred during the year, the operators and their employees both working together for larger production.

The number of fatal accidents was large because of an explosion at the Burnett mine on Aug. 28 in which twelve persons were killed. The mine was worked with approved safety lamps and the explosion was thought to have occurred when one of the firebosses ignited a shot when gas was present. Thirty-three fatal accidents occurred to Dec. 21. These were due to the following causes: Falls of roof, 12; mine cars and locomotives, 3; gas explosions, 1; coal dust explosions, including gas and dust combined, 12; electricity, 1; suffocation in chutes, 1; falling down chute, 1; surface, 2.

Many improvements have been made in and around the mines during the past year tending toward the safety and comfort of the employees. All mines that generate explosive gas, in any quantity, have been placed on approved safety lamps. Mine rescue equipment has been placed at all mines where over twenty men are employed. Wash and changehouses, for the accommodation of the employees, have been built at all mines where a majority of the men have petitioned for them. New cottages and up-to-date hotels have been built at several of the mines for the accommodation of the employees, and on the whole the living conditions improved over former years.

COMPARATIVE TONNAGES, BY COUNTIES, FOR 1917 AND 1918—LAST TWO MONTHS ESTIMATED

County	1917	1918
King	1,314,366	1,347,300
Kittitas	1,741,237	1,776,500
Lewis	130,578	179,600
Pierce	606,449	618,500
Skagit	1,000	6,400
Thurston	204,688	267,500
Whatcom	4,841	4,200
Totals for state	4,002,759	4,200,000

C. J. Smith has opened a new mine at Ravensdale on the Northern Pacific Ry. A new preparation plant is under construction. Two beds that underlie those formerly worked at Ravensdale have been opened, and prospecting is being done on other measures that may be opened later. A new mine is under development at Bellingham known as the Bellingham Coal Mines, under the management of John C. Eden and Michael Earles. The seam of coal on which this mine is opened is classed as a good grade of subbituminous and was worked in the early history of the state, and coal shipped therefrom was sold in the San Francisco market. The old mine was abandoned about 35 years ago. Part of the output of this mine will be used at the plant of the Superior Portland Cement Co., at Concrete, of which Mr. Eden is president.

Contracts have been let and work started in sinking a shaft 300 ft. to a newly discovered 12-ft. bed of coal on the property of the Wenatchee Orchard Land Co. in Moses Coulee, near Wenatchee, Wash. The coal is classed as sub-bituminous and is thought to be about the same in quality as that mined in Lewis and Thurston counties. If development proves this field to be as extensive as it now promises, it will mean cheaper fuel for that part of central Washington, as coal is now shipped from King and Pierce counties to supply that market.

The problem that confronts the Washington coal operators in competing for business with surrounding districts and fuel oil is to find a market for the smaller grades of coal produced at the mines. In some of the districts, especially King and Pierce counties, where the coal is mined on the heavy pitches, the proportion of slack and pea, in some cases, runs as high as 50 per cent of the output, causing the market to be supplied with a surplus of these grades of coal.

The Pacific Coal Co., the largest producer of commercial coal in the state, some years ago installed a briquet plant near its mines which produces a briquet from this coal that is widely used on the commercial market. During the past few years it has carried on experiments to develop the use of powdered coal. During the last year it has spent considerable money in creating a market for the powdered coal, and during the last year some of the largest office buildings in the city of Seattle have changed from fuel oil to powdered coal, claiming it was cheaper than fuel oil at the present price and eliminating, to some extent, the smoke nuisance attendant upon coal and oil as ordinarily used.

No shortage of coal has existed during the past year in this state. During the last two months of the year there was a falling off in the demand for domestic fuel, due to the mild weather and the fact that the domestic consumer had stored his fuel during the summer and fall months as advised by the state fuel administrator.

West Virginia

SPECIAL CORRESPONDENCE

THE only figures obtainable on coal production for 1918 in West Virginia are those covering the fiscal year ending June 30, 1918. These reveal a material increase over the preceding fiscal year, and it is probable that were figures available for the calendar year of 1918 still further increases would be shown unless the sudden softening of the coal market following the signing of the armistice terms caused a slump in operations sufficient to offset gains made throughout the rest of the year.

The total production of coal in West Virginia during the period between July 1, 1917, and July 1, 1918, was 80,674,913 gross tons, which reduced to net tons gave the state a total production of 90,355,903 tons. This was an increase over the previous fiscal year of 868,261 gross tons, or 972,447 net tons. This large tonnage was produced by 71,075 inside employees and 18,272 outside employees, but only 710 more inside employees and 2542 outside men were used in the latter year to bring about the increase given.

There were 667 companies with 1203 mines in operation during the fiscal year ending June 30, 1917. This number was increased to 793 companies with 1359 mines during the year ending June 30, 1918—an increase of 126 companies and 156 mines. Despite the fact that a less number of men were engaged in the manufacture of coke during the 1918 fiscal year than was the case during the previous year—the figures being 2518 as against 2570—yet there was an increase in the coke manufactured, the figures being 3,122,722 tons as against 2,533,314 tons or an increase of 589,408 tons.

During the year the County of Summers began to produce coal for the first time. The county producing the largest tonnage during the fiscal year ending June 30, 1918, was McDowell, with a total production of 17,806,400 gross tons. Logan ranked next with 9,230,078 and Fayette next with 8,828,080 gross tons. The county producing the smallest amount of coal was Summers, with only 5338 tons.

It is estimated by the State Department of Mines that there were between 250 and 300 wagon mines in existence at the end of the fiscal year, many of which have ceased to operate since the signing of the armistice.

The mining industry labored under many handicaps at the beginning of the 1918 calendar year. Chief among these were inadequate transportation facilities and a totally inadequate car supply. With the advent of spring, however, the car supply improved, but floods interrupted operations. When the old system of car distribution was abolished and the mines were given an adequate car supply, production shot upward although affected by the drafting of men for the army, reaching a peak the latter part of July. The mines also gave promise of eclipsing their previous performance in October, when the influenza epidemic spread throughout the state, seriously affecting production. About the time the industry was beginning to recover from the influenza epidemic, hostilities ceased, and following a slum in the market, production dropped materially, reaching its lowest point during Christmas week.

While the coal trade is unusually quiet insofar as West Virginia is concerned, nevertheless coal men of this state look forward with optimism to the year 1919

On a rough guess it is estimated that the production for the calendar year of 1918 will exceed production for the fiscal year by 10 per cent., or that the total amount of coal mined in West Virginia up until Jan. 1 was about 100,000,000 tons. At least this is the opinion of the Department of Mines.

Northern West Virginia

By H. A. WILLIAMSON
Fairmont, W. Va.

COAL affairs in northern West Virginia are so involved one within another that it is an almost hopeless task to attempt to line them up. Government interest and control, or partial control, if not the most important feature of the year just past, is at least the one attracting most attention at the moment.

Some operators may not be quite satisfied with the coal prices fixed by the Government, yet it is evident that these prices have not in any way curtailed production. Just what will happen when this control is removed is, at this time, an important question; numerous opinions have been advanced, but in reality it looks much as if the operators, as a whole, are considerably more nervous about the removal of the price restriction than they were over its original application.

POOLING MEETS WITH APPROVAL

In a general way the same thing is true of the Tidewater Coal Exchange. Numerous operators were extremely pessimistic as to the pooling arrangement, but now a number of them are wondering what is going to happen when the system is abandoned.

In one direction at least the fixed price and pooling have helped the consumer. The snowbird, or wagon-loading, mines have not been so active this year. It cannot be denied that on the average the price of snowbird coal has been high, as that was the incentive for such operations; likewise it is undisputable that they require a longer time for loading cars than do tipple mines, hence if these cars are given to mines of the latter type they go out anywhere from 5 to 15 hours sooner than if the snowbird loaded them.

After all that has been written and said, the following seems a mere rehash, yet it is impossible to discuss events of this region for the year without bringing up again a condition which may now be justly stated to have become "chronic." In spite of statements at various times from the Federal management the car shortage here has been severe. It is possible that the average percentage of cars furnished has been somewhat higher than last year, but actually the long continued shortage has affected the situation in other ways than through a simple lack of cars. During the year 1917 and well into 1918 many of the larger companies carried extra equipment and continued work on various projects to increase tonnage. With the continued car shortage this equipment and work were gradually curtailed until at this time it is probable that there could not be a large increase in tonnage turned out other than what could be got by working six days a week with present equipment and labor. The longer this car shortage continues the more serious this condition will become, as there is, of course, a decided tendency for equipment and labor to shrink to a point where all factors balance. There is, for example, no incentive for the operator to repair the damaged mine cars on his car shop siding so long as he has more than enough in operation to take care of his output.

Due exclusively to shortage of railroad cars the labor actually available in the region had, up to the first of October, lost on an average two days' work from each week throughout the entire year. If we accept the figures as shown weekly by the U. S. Geological Survey, we find that almost without exception the car shortage has been more severe in northern West Virginia than in any other coal region. The Survey, in addition to showing time lost on account of car shortage, also shows percentage of time lost on account of what is termed "Labor Shortage," "Strikes," "Mine Disability," "All Other Causes" and "No Cause Given." The mere fact that other regions had more cars and were therefore able to work more days per week, would lead to the conclusion that the shortages due to these other headings listed by the Survey would be greater in northern West Virginia than in other regions; yet directly the opposite is the case. In many instances the percentage of shortage for the region due to these other causes is as low or lower than any other district, and almost without exception such percentages are far below the average for all regions. All this would certainly tend to show that both miners and operators must have made concentrated and well directed efforts to get out coal, and that had cars been available there would have been an increase in tonnage of at least 30 per cent. over what was mined for the year.

NEW DEVELOPMENTS UNDER WAY

Tonnage figures for northern West Virginia have always been difficult to obtain in any reasonable time. It appears now that the coal tonnage will be slightly less for 1918 than the production of 1917, while the coke production will be about the same or slightly more. About 20 new mines were opened, including a number on the Monongahela R.R., and one or two having arrangements for loading river coal. Work has been steadily continued on the new mines of the Consolidation Coal Co. at Wyatt, W. Va. There are three of these mines, at present loading coal over temporary tipples, with a steel tipple under construction to take care of the entire output, which is to be 4000 tons per day. It will be a relatively short time until this steel tipple is in operation. Construction work is being carried on at several other operations of smaller capacity, but owing to the car situation already outlined these new mines have had little or no effect on the total tonnage produced.

Based on normal production it can be said that there is a labor shortage; based on the car supply, however, it can be replied that the labor shortage has had no appreciable effect on tonnage.

The Lake trade, which has always been one of the mainstays of this region, suffered probably more than any other one branch of the business; 1917 saw this trade badly crippled, due to lack of cars and other items, but the shipments in 1918 will not be over 65 per cent. of those of 1917 and possibly not that much. This is due not only to lack of cars but also to Government instructions and orders applying fuel elsewhere under the zoning system. This is probably the only bad effect the zoning system has had on this region

MANY SALES OF LAND RECORDED

Numerous transfers of coal properties have been recorded during the year, and there has, as always, been ready purchasers for anything offered. Owners, however, have great faith in their holdings and transfers of large areas are rare—during the present year 200 acres being the largest one noted. There are purchasers for Sewickley coal and some small amounts of the Redstone Seam, while at points where they are available one or two beds below the Pittsburgh Seam are opened. The Redstone Seam is about 60 ft. above the Pittsburgh Seam, and the Sewickley about 60 ft. above the Redstone, while below the Pittsburgh about 635 and 705 ft. respectively the Upper and Lower Freeport occur. All these beds have received some attention and show at points conditions more or less favorable for operation, but from various causes such as poor quality, disturbances due to removal of Pittsburgh Seam, variations in thickness and limited area of workable coal there is a strong tendency on the part of experienced operators not to attempt their operation. The normal price of Pittsburgh Seam lands, with full mining rights, seems to be in the neighborhood of $500 per acre at this time.

A particularly gratifying feature of the past year has been the steady growth of safety work. It might appear that this phase of mining was somewhat overworked, yet when it is considered that nearly all mines worked shorthanded and with many inexperienced men, an increase in accidents should have been expected. This was, however, not the case, and unless something happens in the last few days of December, when the accident list for the year is compiled, it will be found well under the record for 1917. The compensation paid for accidents is a fair index of their extent and nature, and this figure will be in the neighborhood of 40 per cent. under that of last year.

For the future, miners and operators appear to feel that while it is quite possible, and more or less to be expected, that the removal of price restrictions and pooling arrangements will upset affairs for a time, the car

situation is bound to be bettered eventually and the available labor will increase with the letting up on Government contract work and other war activities—while sooner or later immigration, which has always been a large source of supply for coal-mine labor, will resume.

What will probably prove a most important event as affects the future, although it may not appear so at this time, is the entrance of the labor union into a field hitherto almost entirely nonunion. Labor had previously resisted attempts at unionizing and the operators had not been in favor of it. In a general way it appears to have been the opinion of all concerned that it was desirable, if not absolutely necessary, as a "war measure," and was carried out on this basis. The relationship between miner and operator has been most excellent in this region, and it is confidently expected that this will continue.

Many Byproducts Plants Building

Operations looking to future business appear on every hand. The Monongahela Valley Traction Co. is working steadily on a new electric power plant located at Rivesville, W. Va., which, with the plants and substations already operated by that company, will supply ample electric power to the various industries of the Monongahela Basin all the way from Morgantown to Clarksburg. The Domestic Coke Corporation, of Cleveland, is working steadily on the 60-oven byproduct plant located at Fairmont; these ovens are being erected under contract by the Koppers corporation. The Lymn byproducts producers of the Monongahela Valley Traction Co., also at Fairmont, are just about to start operation. If these producers are the success that is confidently expected, additional units will be started immediately. One or more of the large glass companies, so numerous throughout this region, are arranging for the erection of gas producers. All these operations call for the use of coal; not only this, they also will supply cheap fuel and power. This will attract allied industries whose normal growth will supply the final link of an endless chain demanding additional fuel and power, consequently more coal.

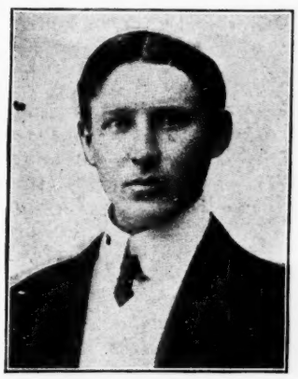
It would appear then that the future of this region now looks like one of rapid growth in many lines of industry calling for cheap fuel and power and, consequently, presents a bright prospect for the local coal trade. All of this makes for betterment of the region's interstate coal trade, which, of course comprises the bulk of the business.

It is the opinion of most operators that while the arrival of peace will, sooner or later, bring about a certain reaction or slacking up of industries, the extent of which it is impossible to predict, coal is nevertheless so essential that the coal industry will feel the minimum effect of such a reaction. Further, the enormous amount of reconstruction work necessary in various parts of Europe, the destruction of many coal mines in France and Belgium, and the complete or partial disorganization of the mining industry of Russia, Austria, Germany, Belgium, France and even Great Britain to some extent, will tend to stimulate American coal exports. The numerous vessels built and building under the American flag will furnish ocean transportation heretofore largely lacking. Altogether there will be a large market for coal in which this region will participate. And if the future prospects are not as brilliant as might be, they appear at least anything but gloomy or discouraging.

Southern West Virginia

By Josiah Keely
Kayford, W. Va.

Tables I and II give a monthly and yearly summary of car supply and loadings for the years 1917 and 1918 in the southern West Virginia fields served by the Chesapeake & Ohio Ry.



Josiah Keely
General Manager, Cabin Creek Consolidated Coal Co.

For the one interested in the study of statistics these tables will afford a history and a comparison.

In November, 1917, the car supply took a sudden and what as yet seems an unaccountable drop. The New River field, however, was favored to the extent of four supplies above other fields in December, ending that year eight suplies ahead.

With the beginning of 1918 the coal industry was well launched into the controversy with the railroads, the Government and the public as to what was causing the coal shortage. It did not seem to occur to publicity agents at first that the fact that the records showed the Chesapeake & Ohio was supplying only about half the cars required had anything to do with the shortage. The war industries started the previous spring had began clamoring loudly for coal, and there was considerable suffering in domestic markets. So uninformed was the general public that one railroad organ, which must have known better, had the temerity to publish an article laying the blame on coal operators, insinuating ulterior motives for curtailments and making an open accusation of unpatriotism.

In the meantime the operators of southern West Virginia began a daily record of the car supply. This was published, at first in obscure columns on back pages, but finally getting to front page space. The public was interested. As absurd as it may appear, it seems that it took an article by Jere H. Wheelwright, of the Fairmont field, written in simple language for the public, to make it understand that a mine was a dead proposition without railroad cars at the tipple.

Then there started in a system of railroading on paper. Allotments were cut down so that the railroad reports began showing increasing supplies of cars to the mines, apparently on the principle that if one loaf is not enough cut it in two and make two loaves of it. However, this was a good move, as all mines were more or less over-allotted, and some on what appeared to many an unfair basis.

By this time, early in 1918, the transportation failure had risen to be a national problem, recognized and discussed by the public; but before remedies could be applied, unheard-of wages were being offered in war work, especially at the Nitro plant below Charleston; furthermore, the selective draft had begun to operate. So by the time cars began to come in reality instead of on paper, many miners had become tired of two and three days per week and had left for the steadier industries.

About the latter part of June a new effect of war methods began to be acute. In order to get coal cars and keep them moving to and from the mines, all other freight was sidetracked and embargoed. It was not

TABLE I. COAL LOADING IN SOUTHERN WEST VIRGINIA FOR YEAR OF 1917

Month	New River — Car Supply	New River — Loaded	Kanawha — Car Supply	Kanawha — Loaded	Coal River — Car Supply	Coal River — Loaded	Guyan Valley — Car Supply	Guyan Valley — Loaded
January	4.45	209,830	5.47	276,765	5.62	77,155	4.79	341,560
February	8.76	436,010	8.13	391,500	7.68	112,880	7.78	558,910
March	10.13	503,780	9.19	451,530	9.95	147,295	9.53	681,580
April	8.97	426,260	9.45	429,990	9.59	114,395	9.94	669,320
May	13.85	519,170	12.97	508,180	14.00	146,155	12.60	692,590
June	12.31	497,270	12.55	462,240	13.38	134,095	13.60	742,090
July	15.47	518,670	15.47	510,905	13.82	129,820	15.01	760,940
August	14.91	572,025	15.15	495,835	15.35	163,270	14.77	752,780
September	17.65	594,020	15.90	530,730	15.93	140,640	15.89	741,450
October	18.07	615,640	16.52	566,845	14.88	171,100	16.13	805,120
November	12.02	543,190	12.03	471,070	12.92	181,100	12.40	699,450
December	13.24	547,180	8.10	263,870	8.21	126,910	8.51	500,990
Grand total	149.83	5,983,045	140.93	5,359,460	141.33	1,644,815	141.01	7,946,780

Grand total Chesapeake & Ohio Railay ..... 20,934,100 tons

TABLE II. COAL LOADING IN SOUTHERN WEST VIRGINIA FOR YEAR OF 1918

Month	New River — Car Supply	New River — Loaded	Kanawha — Car Supply	Kanawha — Loaded	Coal River — Car Supply	Coal River — Loaded	Guyan Valley — Car Supply	Guyan Valley — Loaded
January	11.26	515,850	9.22	290,780	8.94	97,530	8.60	390,270
February	12.91	561,750	13.29	413,440	12.60	135,270	13.37	702,940
March	12.57	517,810	14.43	416,190	14.26	139,780	13.65	790,350
April	12.74	503,760	13.55	421,500	14.16	195,160	14.09	889,880
May	18.94	611,270	19.00	564,920	17.85	209,810	16.11	987,980
June	21.96	584,010	17.00	529,420	16.95	193,520	16.11	964,620
July	26.10	642,170	25.15	652,850	25.55	234,560	24.82	1,070,250
August	26.21	623,160	19.39	567,690	20.66	217,880	20.69	986,750
September	22.85	534,160	22.13	572,080	22.23	221,630	22.20	985,920
October	23.16	532,500	21.58	538,940	22.02	207,060	19.34	840,600
November	24.97	453,490	24.45	508,960	25.00	196,310	24.67	783,050
December	20.96	330,740	19.66	413,960	20.86	161,810	20.48	559,840
Total	234.63	6,410,670	218.85	5,890,730	221.08	2,210,320	214.13	9,952,450
Grand total Chesapeake & Ohio Ry								24,464,170 tons

unusual to experience curtailments of output on account of non-delivery of supplies, mine timber, feed, rails and repair parts. Labor was not sufficiently paid by the railroads to compete with other industries, so the branch lines over which the coal must be moved to the main lines were neglected. More money was spent cleaning up wrecks than would have made the needed repairs. It was not unusual to see a section foreman working alone or with only one man. Still, the cars did continue to come, and for the closing months of 1918 few operators on the Chesapeake & Ohio can say they did not have all they wanted.

A review of the year would not be complete without mention of the power failure beginning in the early part of the year and still causing occasional losses. The New River and Kanawha fields are supplied largely from the Virginia Power Co., at the mouth of Cabin Creek. This plant, instead of keeping a reserve unit, loaded everything up to the limit with increasing business, so that when one of its units went down New River and Kanawha had to alternate in power consumption. The Fuel Administration directed that these districts take a weekly turn working nights and early mornings. The miners stood it loyally for several weeks, then came strikes to force power service.

However, on the whole, labor loaded from one to two tons per day per man more than in 1917. This was due partly to the few loaders having a better chance to work, partly to the operation of the West Virginia thirty-six-hour-per-week law, and, I believe, largely to patriotism as nourished by speakers, placards and proclamations.

The increased value of coal made it possible for many companies that had not previously spent money on welfare work to extensively repair houses, build Y. M. C. A.'s and amusement halls, and to install playground equipment. Anyone passing through the field will be struck with the many evidences of prosperity as shown by the more attractive appearance of the camps.

On account of steady work the last half of the year, accidents per tons mined have been reduced as compared with 1917, when "big days" were attempted to make up for periods of car shortage.

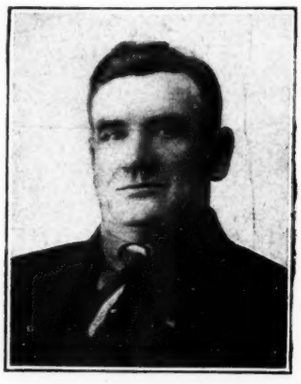
Again turning to figures, the car allotment for this region has been cut just about half, it being 97,940 tons per day now, as against 189,260 tons in 1917. Also, the number of operations has nearly doubled. Probably few individual mines have put out more coal than in 1917, but with all the new operations the region shows an increase of nearly 20 per cent. over 1917, Guyan Valley showing as much increase as all the older fields put together.

Wyoming District No. 1

By George Blacker
State Mine Inspector, Cumberland, Wyo.

COAL production of District No. 1, of Wyoming, for the year ending Sept. 30, 1918, was the largest in its history. The mines have been working full time, with a scarcity of men. The demand for coal has never been greater than it has been during the past year. Each mine was taxed to its utmost, with each striving to meet the demand in order to bring the war to a victorious conclusion. Relations between the operators and miners have been pleasant, and only one object has been in view, that of winning the war.

Thousands of dollars worth of Liberty Bonds were purchased by the different



George Blacker

locals throughout the district. Every wage earner, man or woman, understood that he or she was expected to purchase at least one $50 bond. Permission was given the operators by the miners to collect 50 cents per man per month as long as the war lasted, this amount to be given to the Red Cross. I am indeed pleased to be able to report that our operators and miners during our national crisis have proved themselves patriots of the truest type.

The tonnage for 1918 was 6,244,731 short tons, as compared with 6,047,748 short tons in 1917, showing an increase of 196,983 tons. The number of fatal

SUMMARY OF PRODUCTION, ACCIDENTS, ETC., OF WYOMING NO. 1 DISTRICT FOR FISCAL YEAR 1918

Number of counties producing coal	4
Number of shipping mines	45
Number of coal miners	1,628
Number of loaders	737
Total number of employees	5,165
Number tons of coal undercut by machines	2,195,254
Number tons pick mined or blasted off the solid	4,049,477
Total net tons of coal produced	6,244,731
Average days of active operation all mines	277
Number of fatal accidents	30
Number of nonfatal accidents	190
Number of employees to each fatal accident	208,158
Tons of coal produced to each fatal accident	172
Ratio of fatal accidents per 1,000 employees	5.7

accidents for 1918 was 30 as compared with 36 in 1917, a decrease of six. Many new mines were opened during the year, but their development has been slow because of the great scarcity of men.

Wyoming District No. 2

By R. V. Hotchkiss
State Mine Inspector, Sheridan, Wyo

DURING the fiscal year ending Sept. 30, 1918, the production of District No. 2, Wyoming, was greater than ever before. The total tonnage produced was 3,172,538.25 short tons. The average number of eight-hour days worked was approximately 250.

CHIEF MINES OF WYOMING DISTRICT NO. 2—THEIR OUTPUTS DURING FISCAL YEAR 1918

	Tons
Sheridan Coal Mines, Nos. 7 and 8	326,932
Acme Coal Co.	421,492.1
Amalgamated Coal Corporation	116,312
Carney Coal Co.	413,953
Wyoming Coal Co.	430,099.9
Kooi Coal Co.	273,591
Cambria Fuel Co.	361,088.5
Owl Creek Coal Co.	309,384
Big Horn Collieries Co.	264,735
Poposia Coal Co.	254,950.65

Seven fatal accidents occurred, four arising from mine cars, two from falling coal and one attributable to explosives. One other fatality was listed, but was not charged to coal mining.

This made one man killed for every 453,219.75 tons produced, or 2.737 men killed for each 1000 employed. There were 48,068.76 tons produced for each nonfatal accident. Of these about 45 per cent. arose from falling coal or rock, about 25 per cent. from cars and 25.8 per cent. men were injured for each 1000 employed. The tonnage produced was disposed of as follows: To railroads, 1,265,068.05 tons; to commercial users, 1,752,855.46 tons. The slack shipped amounted to 219,786.2 tons.

As a whole, the miners have been well satisfied during the past year, laying aside their personal grievances

in order to back up the United States during the war overseas. The total number of men employed amounted to 2558. These men used 39,437 kegs of black powder, 13,108 lb. of giant powder and 73,008 lb. of permissible explosives. The working forces of the mines were distributed as follows: Miners, 1441; daymen, inside, 647; daymen, outside, 470.

The Sheridan No. 8 mine is the only new one now producing coal. It has been producing for ten months of the last fiscal year. It reaches a 47 ft. 6 in. bed of clean coal that is characteristic of the coal measures of northern Wyoming.

All the necessary improvements for bigger tonnage were maintained by all companies.

Seven certificates of competency were granted during the year, all of which were foreman's papers.

Alberta

By J. T. Stirling
Chief Inspector of Mines

THE estimated production of coal in the Province of Alberta for the year 1918 is approximately 6,250,000 short tons, and as the production for the year 1917 was 4,863,414 tons, this means that there will be an increase during 1918 over 1917 of approximately 1,300,000 tons. Exact figures are only available for the ten months ended Oct. 31, 1918. The total output during that period was 5,165,581 tons, as compared with 3,738,679 tons during the same period of the year 1917.

ALBERTA COAL PRODUCTION FOR TEN YEARS

Year	Output in Short Tons
1909	2,174,329
1910	3,030,757
1911	1,694,564
1912	3,446,349
1913	4,306,346
1914	3,821,739
1915	3,434,891
1916	4,648,604
1917	4,863,414
1918 (estimated)	6,250,000

The market for Alberta coal has been extended to such an extent that 433,331 tons were shipped into the Province of Manitoba during the first ten months of the year 1918, as compared with 188,647 tons during the same period of 1917. This additional market to a great extent was obtained owing to the fact that the shipments of coal from the United States to Canada were considerably decreased during 1918, and also because an extensive publicity campaign was started by the provincial government of Alberta warning consumers to put in a supply of fuel at the earliest opportunity; as a result a much larger proportion of the fuel required was stocked throughout the western provinces during the summer months.

Sixty-four new mines were opened during 1918 and 58 abandoned; the number at present in operation being 289 as compared with 283 at the end of 1917. Twenty-one fatal accidents occurred during the year as compared with 24 during the year 1917, and 119 nonfatal during 1918 as compared with 101 during 1917.

There are nine mine-rescue stations in operation in the province, three of these being installed in railway cars; 106 men have obtained certificates of efficiency in mine-rescue work. A large number of the bituminous coal mines in Alberta are now using electric lamps of the Edison type. There has also been a considerable increase in the number of coal-cutting machines in use.

Notwithstanding the increased production which has taken place during the past twelve months, the operation of the mines is being limited at the present time to about 60 per cent. of their capacity owing to lack of market. A large number of the mines—particularly in northern Alberta—have, during the last three months of the year, only been in operation on an average of about two days per week. It is estimated that if there had been sufficient market to keep the mines operating fairly steadily during the year 1918, that approximately 10,000,000 tons of coal could have been produced without increasing the number of men employed.

J. T. Stirling

DISPOSITION OF COAL PRODUCED IN ALBERTA DURING THE TEN MONTHS ENDING OCT. 31, 1918

	Short Tons
Sold for consumption in Alberta	2,884,259
Sold for consumption in British Columbia	85,147
Sold for consumption in Saskatchewan	1,147,590
Sold for consumption in Manitoba	433,331
Sold for consumption in Ontario	555
Sold for consumption in United States	113,151
Used in making coke	49,350
Used in making briquets	51,286
Used under colliery boilers	273,831
Put to waste	127,081
Total output (for ten months)	5,165,581

British Columbia

By George Wilkinson
Chief Inspector of Mines, Victoria, B. C.

DURING the year 1918 there was mined in the Province of British Columbia 2,881,915 short tons of coal, an increase of 195,354 short tons in comparison with 1917. Of this amount 1,866,571 tons was mined by the collieries of Vancouver Island, 195,191 tons by the collieries of the Nicola Princeton district, 819,785 tons by the collieries of the Crows Nest Pass district and 367 tons by the new mine at Telkwa in the northern district. The following are the comparative tonnages (in long tons) of the various companies and districts for 1918 and 1917:

COAST DISTRICT—VANCOUVER ISLAND

	1918	1917
Canadian Collieries (D), Ltd.	789,614	797,348
Canadian Western Fuel Co., Ltd.	731,922	658,427
Pacific Coast Coal Mines, Ltd.	82,629	150,538
British Columbia Coal Mining Co.	14,716	61,586
Nanoose Collieries	30,436	27,822
Granby Consolidated Mining Smelting and Power Co.	17,265	.....
Totals	1,666,582	1,695,721

The production of Vancouver Island collieries for 1918 was thus 1,666,582 long tons (1,866,571 short tons), a decrease of 29,139 tons (32,635 short tons) from the output of 1917.

COAST DISTRICT—SUBDISTRICT OF NICOLA PRINCETON

	1918	1917
Middlesboro Collieries, Ltd.	100,000	83,458
Merrit Collieries, Ltd.	.....	13,357
Pacific Coast Colliery	.....	206
Fleming Coal Co. (successors to Inland Coal and Coke Co.)	31,000	7,296
Coalmont Collieries, Ltd.	4,500	.....
Princeton Coal and Land Co.	38,778	46,926
Totals	174,278	151,243

The production of this district thus shows an increase of 23,035 long tons over the output of 1917.

CROWS NEST PASS DISTRICT

	1918	1917
Crows Nest Pass Coal Co.	605,979	450,686
Corbin Coal & Coke Co.	125,972	101,065
Totals	731,951	551,751

NORTHERN BRITISH COLUMBIA

Telkwa Collieries	328	.....

These two districts thus show an increase of 180,200 long tons, or 201,824 short tons, over the output of 1917.

Of the total amount of coal mined approximately 280,746 long tons or 314,435 short tons were converted into coke. The total coke production for British Columbia was approximately 190,696 long tons. Of this amount the Crows Nest Pass Collieries made 166,003 tons. The Canadian Collieries (D), Ltd., made 39,776 tons at its ovens at Union Bay, Comox colliery.

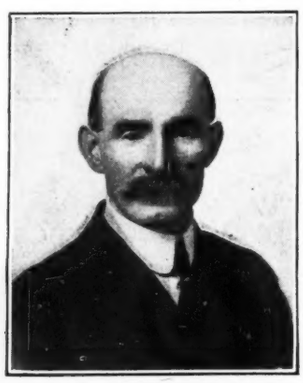
Strikes, mine fires and the ravages of the influenza epidemic have been responsible for a considerable loss in output during the year 1918. To these causes must also be added a serious shortage of labor during the year.

The monthly tonnages produced were fairly steady for the first seven months. The maximum tonnage for any individual month of the year was reached in August, when 240,237 long tons were mined.

On Sept. 4 a strike was called in the Crows Nest Pass district, a demand (based on alleged dangerous conditions) being made from the miners for the single-shift system. After the strike had lasted a month the mines were ordered opened by Commissioner Armstrong on the single-shift system pending an investigation into mining conditions by a royal commission to be appointed by the Minister of Mines who will report on conditions and determine if the demands made by the men for a single shift is warranted.

The commission is to be composed of one person recommended by the company, one by the men, and a chairman appointed by the Government. The commission has not yet started to investigate owing to the failure of the men to appoint a representative.

The strike in the Crows Nest Pass district was responsible for the loss of approximately 60,000 long tons, while the adoption of the single shift, and the ravages of the influenza epidemic,



GEORGE WILKINSON

have been responsible for the loss of approximately 75,000 more in the same district.

On Vancouver Island the East Wellington mine of the British Columbia Coal Mining Co. was closed down the first eight months of the year on account of a fire in the workings. This resulted in a loss of output of approximately 50,000 long tons. The influenza epidemic in this district has been responsible for a further loss of 50,000 tons.

NEW MINES OPENED DURING THE YEAR

The Granby Consolidated Mining, Smelting and Power Co. has opened and equipped a large mine at Cassidy's, Vancouver Island, where it has acquired a large area. The bed being mined is the famous "Douglas seam."

The mine is opened by three slopes driven in from the outcrop, one slope being used as a haulageway, one for a traveling road for the men and one for ventilation. The workings are being laid out along the most modern lines. The surface equipment is of the best, and nothing but the most up-to-date machinery is being installed.

About 100 acres of land has been cleared and some 75 houses built for the accommodation of the officials and employees. A water system has been installed and the houses are electrically lighted and fitted with all modern conveniences.

At Anyox the company has almost completed a battery of byproduct coke ovens, where it is the intention to make coke for use of the smelter at that point.

During the year the Canadian Western Fuel Co. started sinking operations on two shafts which will be known as the Wakesiah mine. Coal was reached in August at a depth of about 300 ft., the bed being the famous Wellington. The hoisting shaft is rectangular, 9 x 16 ft., and the air shaft is 10 x 8 ft. in cross-section. The surface equipment will be designed along modern lines.

The Harewood mine, which had been long closed, and was reopened by the same company last year, is producing approximately 1000 tons daily.

The new No. 5 mine opened by the Canadian Collieries (D), Ltd., at South Wellington is now producing about 300 tons per day. A good substantial tipple and surface equipment has been installed and this operation is capable of handling large tonnages.

In the Nicola Princeton district the Fleming Coal Co. has acquired the interests of the Inland Coal and Coke Co. and has reopened the mines, which have been closed for some time. The Coalmont colliery has also been reopened, and production started. A new mine has been opened in northern British Columbia at Telkwa and has been shipping a small amount of coal to Prince Rupert.

Improvements have been carried out at the various collieries during the year in an attempt to further safeguard operations. Safety inspectors have been appointed by some of the companies.

The Burrell gas detector has been adopted at all the collieries for testing for percentages of gas lower than can be detected by the ordinary safety lamp. In addition to the test made with this detector, mine air samples are taken monthly from the splits and returns of the various mines. These are sent to Ottawa for analysis, and records are tabulated and checked with the results obtained by the gas detector.

Some 4000 Edison electric lamps are now in use in the various mines of the Province. Training in mine-rescue work has been vigorously carried out by the various mining companies and by the Government of British Columbia.

The new Gibbs apparatus is finding much favor in British Columbia. The provincial government has installed six sets in its mine-rescue station at Fernie, which was the first consignment of apparatus of this type to Canada. Several of the mining companies are installing this apparatus, there being some twenty sets now on the way for installation.

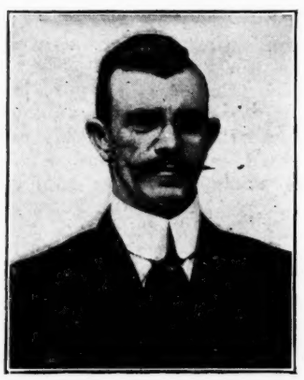
A highly successful meet was held by the Vancouver Island Mine-Rescue Association at Cumberland on Sept. 2, and six mine-rescue teams competed for prizes. First-aid events were also held, and seven teams competed in the various events.

The annual meet of 1919 will be held in Nanaimo, and preparations are being made to make it a successful event. The Hon. William Sloan, Minister of Mines, was present at the meet held at Cumberland and presented the prizes to the winning teams. Mr. Sloan takes a keen interest in mine-rescue work, as well as all other things pertaining to the welfare of the workers.

Saskatchewan

BY E. PIERCE
Mine Inspector, Roche Percee, Saskatchewan, Can.

THE record output of coal for the Province of Saskatchewan, Canada, for the year 1917, was 336,726 tons, produced by 264 miners and 131 laborers from the 51 mines in op-



E. PIERCE

eration. It is noteworthy that there were no fatal accidents and only two nonfatal for the year. In the year 1916 the tonnage was 267,234, from 49 mines employing 236 miners and 131 laborers. There were no fatal accidents but an increase of two nonfatal over the record of 1917—four men were injured in or about the coal mines of the state in 1916.

The amount of coal produced in the province for the ten months ended Oct. 31, 1918, was 209,799 tons, and while figures are not available for the remaining two months, it is predicted that the record output of the preceding year will not be reached during 1918.

The mechanical equipment underground was increased slightly in 1917, when six electrical coal-cutting machines were in operation in the province, whereas four mining machines were used here during each of the previous two years. Of the four principal mines of Saskatchewan, two have electrical equipment. The Western Dominion Collieries, Ltd., produced 113,287 tons of coal in 1917 and is equipped with four electric coal-cutting machines and two electric motors underground; at the tipple of this company there is a mechanical box-car loader.

Coal—Now and Next Year

By C. E. LESHER
Statistician, United States Geological Survey

C. E. LESHER

THE production of more than 585,800,000 tons of bituminous coal and lignite and 99,500,000 net tons of anthracite in the United States in 1918—a grand total of nearly 685,300,000 tons—has set a new high mark for the industry and the country; there is little likelihood of again reaching this record in the year now beginning, or even in 1920. Coal is produced in the United States to meet the requirements of industry and the domestic and public needs of the people of this country and Canada—not more than 1 per cent. of the output leaves the shores of North America. The needs of industry currently supplied, the mines have no choice but to stop, for, excepting by the larger anthracite companies, coal is not stored by the producer. Unless for production against a real or imaginary future inability to obtain fuel, the consumer does not invest in abnormally large storage piles of coal.

The production of all kinds of bituminous coal in 1918 was ample for all needs. Despite the inroads of the influenza epidemic among mine workers and railroad employees, it would easily have been possible in November and December to have produced and transported 100,000,000 instead of 86,000,000 tons, and the year's total would have reached the coveted 600,000,000 mark. But the country did not need the coal. Even before Nov. 11, when word came that no more guns and shells and new plants for making these engines of destruction were needed, it was evident that the Fuel Administration's estimate of 623,000,000 tons from April to April would not be required; that, having seen that the coal mines and the railroads could get the coal into their stock piles, consumers were fast losing their anxiety.

In the six months from May 1 to Oct. 30, 1918, 319,000,000 net tons of bituminous coal were produced, six months in which the lowest monthly output was only slightly less than 51,000,000 tons and the highest more than 55,700,000 tons. At this rate 600,000,000 was easy and 624,000,000 not out of reason. The results, by months, for 1917 and 1918 are given in the following table; from January, 1915, to December, 1918, results are shown graphically in the diagram (Fig. 1).

Totals for the country as a whole do not begin to tell the story. Coal mines are not evenly distributed over the country, nor are consumers. Coal from each field has even in normal times fairly definite market territory outside of which it does not move, and under the zone system these areas are rigidly prescribed. A survey of the figures given in the table above throw light on the situation this winter.

PRODUCTION OF BITUMINOUS COAL AND LIGNITE IN THE UNITED STATES IN 1917, WITH ESTIMATES FOR 1918, BY MONTHS, IN NET TONS

	1917	1918
January	47,967,354	42,607,000
February	41,352,711	44,385,000
March	47,868,652	48,631,000
April	41,854,320	46,591,000
May	47,086,452	50,927,000
June	46,824,646	51,758,000
July	46,291,572	55,587,000
August	47,372,226	55,732,000
September	45,107,956	51,757,000
October	48,337,726	52,885,000
November	47,689,801	44,393,000
December	44,037,147	40,630,000
Totals	551,790,563	585,883,000

Demand for coal did not take an upward turn, following the depression of 1914, until late in 1915, and

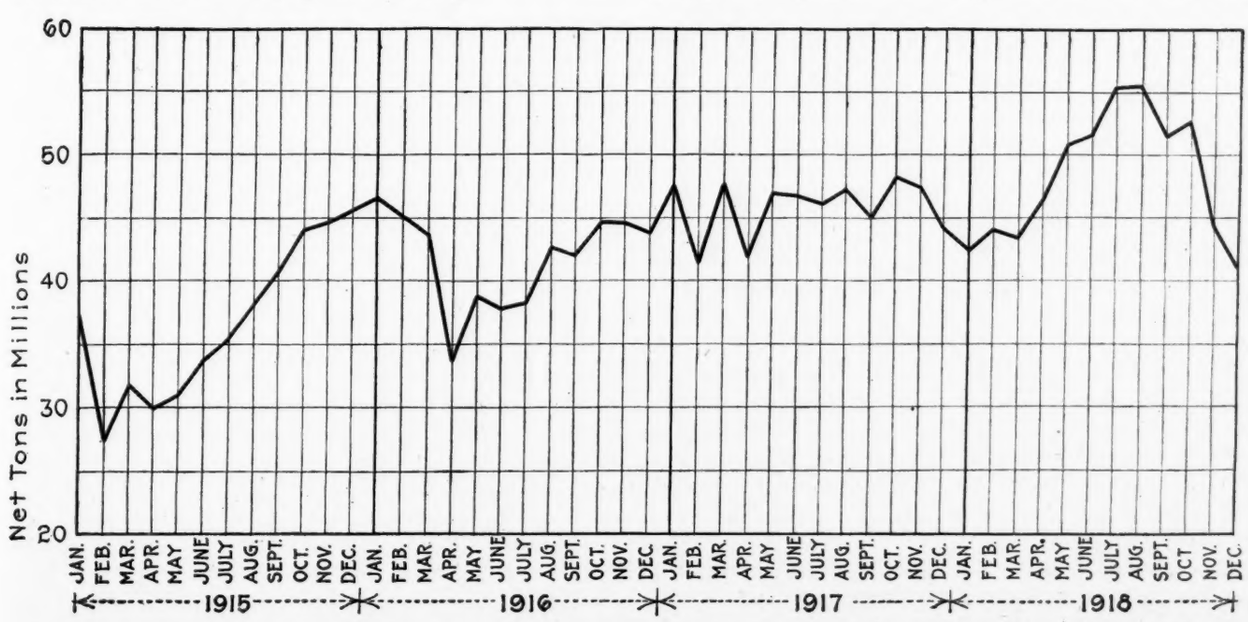


FIG. 1. PRODUCTION OF BITUMINOUS COAL AND LIGNITE IN THE UNITED STATES BY MONTHS, 1915-1918

then was sustained through 1916 only in the eastern-most sections of the country. During the summer of 1916, while the mines in the Pittsburgh district were running full time, those in Illinois were suffering from their usual warm weather idleness because, by operating one, two or three days a week, all the coal anyone wanted in the latter state was supplied.

From October, 1916, to October, 1918, there were few dull moments in the coal business anywhere in the United States. Demand for coal to run the factories in the East that had sold munitions to Europe became, in the winter of 1916-17, more than the normal facilities could send forward, and Ohio and even Illinois coal was shipped to New England.

The mines that were to supply this intensified manufacturing activity along the North-Atlantic seaboard and as far west as the northeastern section of Ohio are in the four states of Pennsylvania, West Virginia, Maryland and Virginia, states from which, in 1916, came more than 54 per cent. of the bituminous output of the country and 60 per cent. of the total, including anthracite. And in 1917, with the greatest need for coal ever faced in this country (up to that time), a demand that fell heaviest in this section, this group of states—tributary to the North-Atlantic seaboard—produced but 1 per cent. more than in 1916; the group gained but 2,800,000 tons, while the other coal fields added more than 46,000,000 tons to their records.

Ohio and eastern Kentucky, with markets mainly west and north, gained 6,244,000 tons, or 12 per cent., in 1917; Illinois, Indiana and western Kentucky, shipping in all directions, from Canada to the gulf and Nebraska to the Hudson, increased nearly 29,000,000 tons, or 31 per cent. There was nothing phenomenal in the record increase of these fields; a steady market permitted the operation of the mines in summer as well as in winter, something new for Illinois.

West of the Mississippi the fields from North Dakota to Texas gained 4,388,000 tons, or 16 per cent.; the Rocky Mountain fields 4,023,000 tons, or 14 per cent., and Washington 971,000 tons, or 32 per cent. In the south, Tennessee, because of strikes in the summer of 1917, made no progress; but Alabama gained 1,982,000 tons, or 11 per cent.

Compare these figures with the estimates for 1918. The most important group, that including Pennsylvania and West Virginia—important because from here comes the major portion of our high-grade coal as well as the total supply for the North-Atlantic and New England States—gained 16,200,000 tons, or 6 per cent. In the country as a whole production of bituminous coal increased 34,000,000 tons, or 6.2 per cent. Eastern Kentucky, Ohio and Michigan gained 6,925,000 tons, or 11.6 per cent., about the same as the increase of 1917 over 1916. Tennessee increased 12 per cent. and Alabama 6 per cent. Illinois, Indiana and western Kentucky gained but 6,533,000 tons, or 5 per cent., against nearly 29,000,000 tons, or 31 per cent., in 1917. In the middle west the group comprising North Dakota, Iowa, the southwestern states and Texas had a slight decrease—

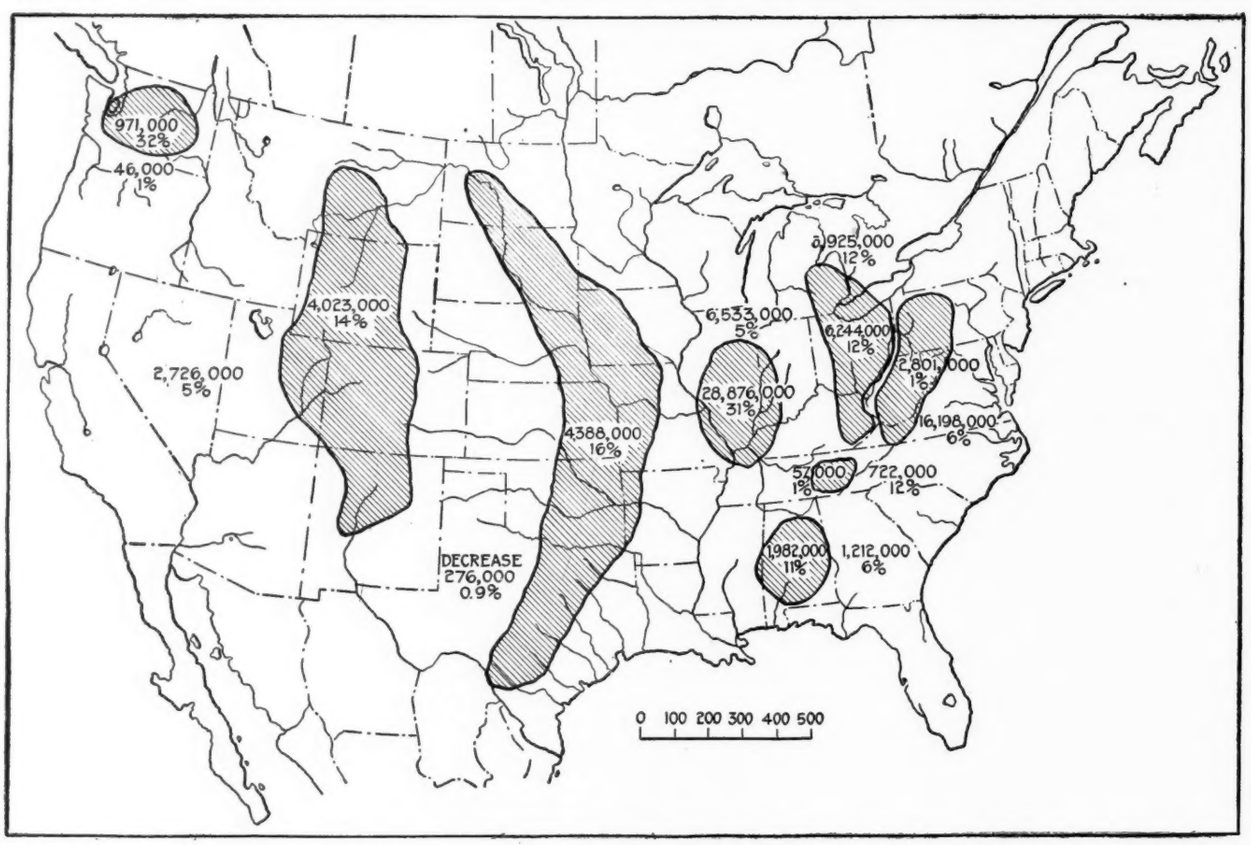


FIG. 2. MAP SHOWING GEOGRAPHIC DISTRIBUTION OF THE INCREASES IN THE PRODUCTION OF BITUMINOUS COAL IN 1917 AND 1918

The figures inside the lines give the increases in net tons and in percentages for the producing fields within the outlined areas for 1917 compared with 1916. The figures outside are 1918 compared with 1917

PRODUCTION OF BITUMINOUS COAL AND LIGNITE BY GROUPS OF STATES, 1915–1918

	Production, Net Tons		Increase 1916 Over 1915		Production	Increase 1917 Over 1916		Estimated	Estimated Increase 1918 Over 1917	
	1915	1916	Net Tons	Per Cent.	1917, Net Tons	Net Tons	Per Cent.	Production, 1918	Net Tons	Per Cent.
Pennsylvania, Maryland, West Virginia and Virginia	247,442,000	270,922,000	23,480,000	9.5	273,723,000	2,801,000	1.0	289,921,000	16,198,000	5.9
Eastern Kentucky, Ohio and Michigan	37,371,000	53,480,000	16,109,000	43.1	59,693,000	6,213,000	11.6	66,618,000	6,925,000	11.6
Tennessee	5,730,000	6,137,000	407,000	7.1	6,194,000	57,000	0.9	6,916,000	722,000	11.7
Alabama	14,928,000	18,086,000	3,158,000	21.2	20,068,000	1,982,000	11.0	21,280,000	1,212,000	6.0
Illinois, Indiana, and Western Kentucky	83,418,000	94,110,000	10,692,000	12.8	122,976,000	28,866,000	30.7	129,509,000	6,533,000	5.3
North Dakota, South Dakota, Iowa, Missouri, Kansas, Oklahoma, Arkansas, Texas	26,224,000	27,119,000	895,000	3.4	31,507,000	4,388,000	16.2	31,231,000	276,000*	0.9*
Colorado, Montana, Wyoming, Utah and New Mexico	24,896,000	29,388,000	4,492,000	18.0	33,411,000	4,023,000	13.7	36,137,000	2,726,000	8.2
Washington	2,429,000	3,039,000	610,000	25.1	4,010,000	971,000	32.0	4,056,000	46,000	1.1
Total†	442,438,000	502,281,000	59,843,000	13.5	551,582,000	49,301,000	9.8	585,668,000	34,086,000	6.2

* Decrease.
† Does not include production in California, Alaska, Oregon, Georgia, Idaho and Nevada.

276,000 tons, or 1 per cent., compared with a gain of 4,388,000 tons, or 16 per cent., the year previous. The Rocky Mountain states increased 2,726,000 tons, or 8 per cent., nearly equal to the gain of 1917 over 1916. Washington, with a gain of 32 per cent. in 1917, increased but 1 per cent. in 1918. The distribution of the increases in 1917 and in 1918 are clearly shown in the map (Fig. 2).

Measure these production figures against the estimated requirements as shown on the map in Fig. 3. In 1917 there were delivered to industrial and domestic consumers and public utilities in the states north of the Virginia-North Carolina state line and east of the Ohio-Pennsylvania state line, 100,940,000 net tons of bituminous coal. To meet the growing demand of war industries the Fuel Administration estimated that requirements of this section in the coal year ending March, 1919, would be greater by 16,680,000 tons, or 16 per cent., than the consumption in 1917. Similarly for Ohio, Indiana, Illinois, Kentucky and Michigan, with a consumption of 115,354,000 tons of bituminous coal in 1917, the increase was estimated at 15,542,000 tons, or 13 per cent.

The southern states, Tennessee, the Carolinas, Florida, Georgia, Alabama and Mississippi, were estimated to require 7,065,000 tons, or 38 per cent. more than the 18,441,000 tons consumed in 1917. The dock states, Wisconsin, Minnesota, and also the Dakotas, were expected to require but 1,689,000 tons, or 9 per cent. above their figure of 18,279,000 tons in 1917. States west of the Mississippi and south of the dock states consumed 48,210,000 tons in 1917, and requirements in the coal year 1918-19 were estimated to be greater by 11,000,000 tons, or 23 per cent. In addition,

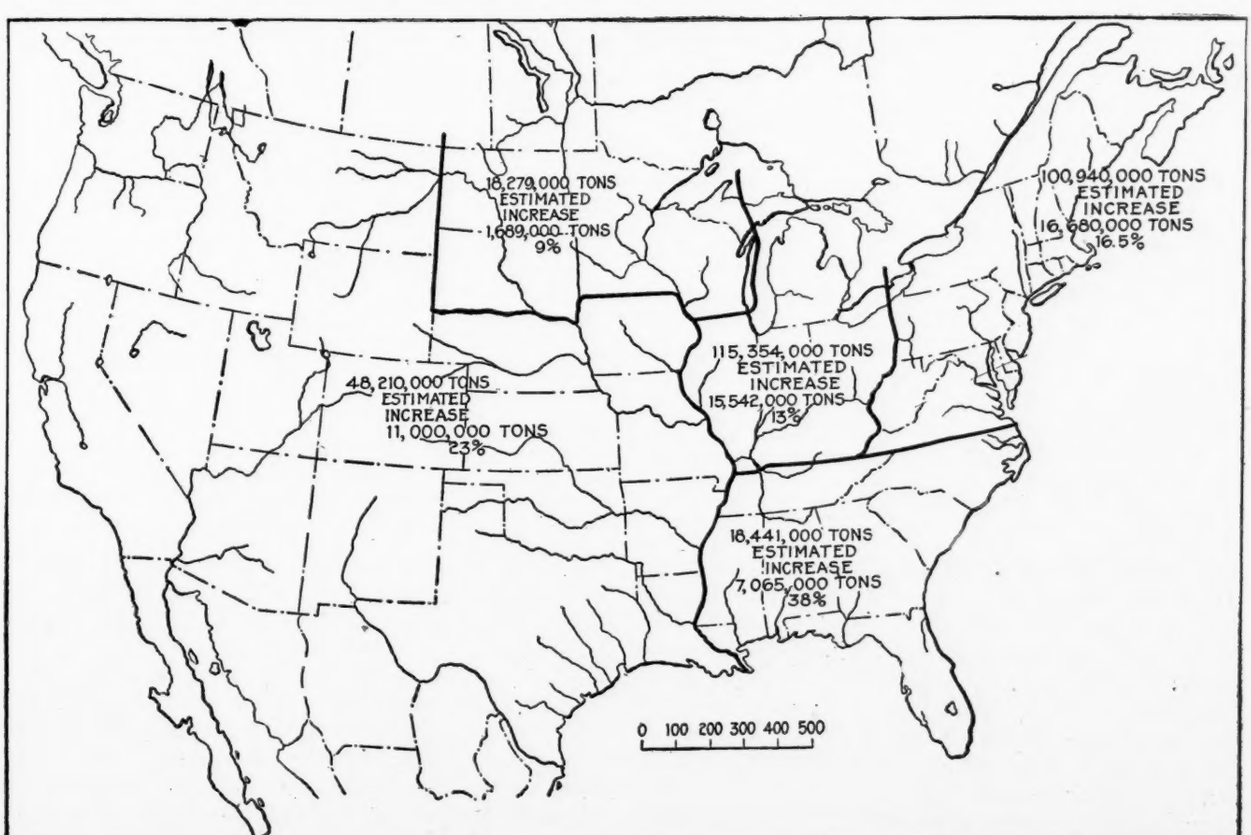


FIG. 3. CONSUMPTION OF BITUMINOUS COAL IN 1917 AND INCREASES IN THE REQUIREMENTS ESTIMATED AT BEGINNING OF COAL YEAR 1918-1919

The Fuel Administration estimated the needs for all industrial and manufacturing establishments, domestic consumers, public utilities and byproduct coke plants. Steam railroad fuel, colliery consumption and manufacture of beehive coke are not included.

the railroads had asked for an increase of 11,000,000 tons, or 7 per cent., from 155,000,000 to 166,000,000 tons, and the navy and Shipping Board asked for several million tons additional. About the only items that were not expected to increase were exports to Canada and abroad, and coal for beehive coke.

The coal fields of Pennslyvania, Maryland, West Virginia and Virginia, from which comes the supply of bituminous coal for the northeast section of the United States, also furnish the greater part of the tidewater supply for steamship bunkers, for the navy and for foreign export. They also ship high-grade coal, both low and high volatile, west by rail and by the lakes.

Lake cargo shipments from these states in 1918 were 16,506,000 tons, a decrease of 2,000,000 tons, compared with 18,453,000 tons in 1917. Deliveries at tidewater in 1918 were 37,489,000 tons against 31,181,000 tons in 1917, a gain of 6,300,000 tons, of which, however, 1,400,000 represented increased shipments to New England by water. All-rail shipments west beyond Ohio increased 2,700,000 tons, and all-rail and Lake Ontario deliveries to Canada, 1,300,000 tons. The net result was that, of the 16,200,000 tons increased production in these states, approximately 10,000,000 tons was available for consumption by all consumers, including the railroads, in the state of Virginia and north and east of the Pennsylvania-Ohio state line.

This increase of around 10,000,000 tons was accumulated after Apr. 1 to meet an expected increase in demand of less than 17,000,000 tons in the twelve months beginning with April. In other words, the northeast section of the United States, the sore spot on the map all through 1917 and early in 1918, has been taken care of this year.

The coal fields supplying the section around the lower lakes had increases in production in 1918 that have nearly equalled the expected gain in requirements. New high records in the movement of lake coal and rail shipments from Illinois to the northwest fully met the increased demands in that section.

In the south the anticipated need for an additional 7,000,000 tons did not materialize. Data have not yet been compiled to show to what extent the gains in production in Alabama—1,212,000 tons—and in Tennessee —722,000 tons—were augmented by increased shipments from Illinois, western and southeastern Kentucky and Virginia; but it is evident that less than half of the 7,000,000 tons additional was delivered in this section.

In the large central and western area shown on the map (Fig. 3), from which eastern coal was largely eliminated by the zones, the increase in production was less than 2,700,000 tons, sufficient, however, to meet actual demand.

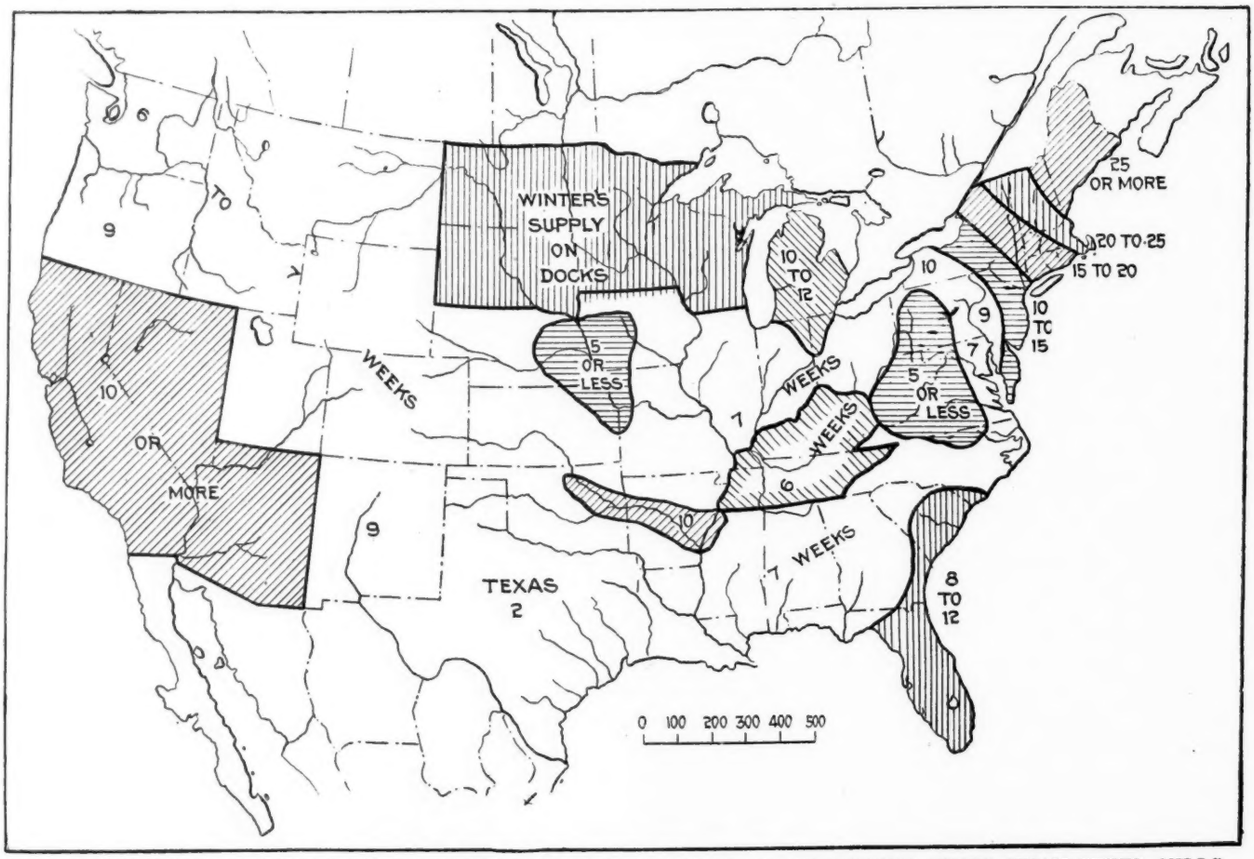


FIG. 4. NUMBER OF WEEKS' STOCKS OF SOFT COAL IN THE HANDS OF INDUSTRIES OTHER THAN STEEL MILLS AND COKE PLANTS ON NOV. 2, 1918

The situation on Nov. 2, 1918, with regard to stocks of bituminous coal in the hands of manufacturing and industrial establishments other than steel mills, and by-product coke plants, is shown on the map, Fig. 4. The most striking feature of the data thus shown is the generally high level of stocks of bituminous coal on hand immediately prior to the signing of the armistice, and the distribution of these stocks. Whereas in October, 1917, stocks were from two to three weeks in Pennsylvania, Maryland, Virginia and West Virginia, on

Nov. 2, 1918, the range was from three weeks in western Maryland, Virginia and West Virginia, five weeks in western Pennsylvania, to seven weeks in eastern Maryland, nine weeks in eastern Pennsylvania and ten weeks in western New York state. Eastward, stocks were greater. Delaware had 13 weeks, New Jersey 12 weeks, southeastern New York State 12 weeks and northeastern New York 16 weeks. In the New England states stocks ranged from 19 weeks in Connecticut to 27 weeks in New Hampshire.

The lower peninsula of Michigan averaged 12 weeks' supply; western Ohio, nine weeks. The industrial section along the Arkansas River in Oklahoma and Arkansas had 10 weeks' supply; southern Florida, 12 weeks. The dock states had their supply assured and in the docks or in the storage piles of the plants. In the Missouri Valley section in Nebraska, Iowa and Kansas only were stocks below the general level of from six to seven weeks. The further from the sources of supply the larger the stocks—a normal and proper condition. Comparative data indicate that stocks of bituminous coal last November were from two to three times those of a year before, even on the basis of augmented rates of consumption.

What of 1919? Will the consumption of coal in the United States be as great in 1919 as in 1918? What, if any, effect will the impending release of centralized control and regulation of distribution, price and labor have on the ability of the coal mines to satisfy whatever the demand that may exist?

The consumption of coal in the United States will not be as great in 1919 as in 1918. The railroads, the largest single users of bituminous coal, will save coal if by no other means can their enormous fuel bill be reduced. A program for the conservation of engine fuel, begun by the Railroad Administration under Eugene McAuliffe, is now said to be conserving coal at the rate of 10,000,000 tons a year. Freedom to select the best and most suitable coals, a privilege largely denied during 1918, will reduce the quantity consumed.

Increased Demand from Industries

Manufacturing industry stopped overtime work in November; overtime operations that required coal. Not only was production of coal at a low ebb in December, but consumption declined and was in some districts below that in the hot months of last summer. However rapidly it may be accomplished, time is required for the transition from a war to a peace basis. The small-arms manufacturing plants are long on help and short on work. The airplane factories have largely ceased operation. The manufacture of smokeless powder is one item, the end of which releases around 4,000,000 tons of coal to other consumers.

The iron and steel industry has shown no indication of lessened requirements for coal, next year, and this is the most hopeful sign that has appeared. This industry, which reached its maximum speed under the conditions obtaining in 1918, consumes in round numbers one-third of the coal used by industrials and public utilities. A study of the reports of fuel consumption by 142 of the larger steel plants shows an increase of 18 per cent. in the average weekly consumption of steam and gas coal (exclusive of that used in making coke) in 1917 over 1916, and an increase of but 3 per cent. in 1918 over 1917. These plants had 54 per cent. more coal on hand Oct. 1, 1918, than on the same date in 1917.

By the summer of 1918 the United States had about reached the upper limit in ability to consume coal, and had the war progressed the ability to consume would have been reached long before the limit of ability to produce.

Conservation has affected and will continue to affect the consumption of coal, but even this praiseworthy doctrine has its backfires. Conservation of transportation exercised through the zones was responsible for making a contractor in Iowa use local coal, two tons of which was required to excavate the same quantity of earth for which but one ton of Illinois coal had previously been required. Many consumers not making ship plate, shells or high explosives found it necessary in 1918 to burn low-grade coal or none. They can now get high-grade coal and will need fewer tons.

Coal saved in 1918 through fear of shortage, and saved because not obtainable, will be coal burned in 1919. The consumer has been reached, however, with the message of true conservation—economy in use. More than ever will the vender of coal be preaching efficiency in use as a selling argument for his particular product. Waste and extravagance will not disappear over night, but the seed of the conservation idea has been intensively sown and the harvest will be greater in 1919 than in 1918.

Foreign Markets Prove Attractive

Eyes are being turned to foreign markets overseas. Exports offshore were 1,500,000 tons less in 1918 than in 1917, and 3,800,000 tons less than in 1916. An increase that will be measured in the millions of tons may be expected here, but to offset it will be a decrease of perhaps as much as 3,000,000 tons in coal for the navy. Bunker requirements will continue to increase with the growth of the merchant marine, but the total is not a significant item and affects but few producing fields.

Viewed in more detail, it appears that the New England and lake coal markets will be easily satisfied in 1919, excepting always the highest grades of coal for which the demand has not been fulfilled for several years. With the certain removal of all restriction in distribution and the adjustment of freight differentials disturbed by the flat 25 per cent. advance of June, 1918, the flow of coal will again turn westward, and West Virginia, Kentucky and Tennessee will compete with Illinois and Indiana, and Illinois and Indiana with Iowa, Missouri and Kansas. To what extent eastern coal will regain its western market is a question as yet unanswered. The time through which consumers were denied the high-grade fuel probably has not been sufficient to permit a proper appreciation of the advantage in use and cost of the local product. Anthracite and by-product coke will again enter largely in the market for domestic use. West of the Appalachians the maximum of production for several years was reached in 1918. The fields from Pennsylvania to Alabama can hardly as a whole expect to exceed the 1918 record in 1919, if in 1920, but the districts in that area from which come the highest-grade coals of the country will have every opportunity to prosper.

Viewed from a distance the progress of the coal industry has been continuously upward, but at close range

it is seen to have had many fluctuations. In the past 38 years, or since 1880, there have been seven "peaks" in the curve of bituminous production—in 1884, 1887, 1893, 1903, 1907, 1910 and 1913, with the expectation of the writer that 1918 represents the eighth peak. In the case of four of the seven depressions following these peaks, but one year was required for the "comeback"; but following 1884, 1907 and 1913, two years elapsed before new high records were established. The records for the past 18 years show but one instance where production was down for three years in succession. The record of 315,000,000 tons in 1873 was followed by three years of depression, and it was not until 1877 that production exceeded the output in 1873.

Activities of the Wholesale Coal Trade Association of New York

By CHARLES S. ALLEN
Secretary of the Wholesale Coal Trade Association of New York, Inc.

THERE is a feeling among the members of the Wholesale Coal Trade Association that there is a useful function to be performed by the organization, if for no other purpose than to cultivate a closer and more cordial relationship among those engaged in the wholesale coal trade. The Coal Exchange, one branch of activity of the association, while in effect but a few weeks, has resulted in bringing together the members in a number of trades, ranging in volume from a few cars to as many as 5000 tons in one transaction. These transactions, without exception, have been consummated between members who were not accustomed to dealing with each other, and the establishing of the Coal Excange has confirmed the judgment of the Board of Directors that it would act as a medium for broadening the field for all members making use of it.

It is the feeling of the members that every effort should be put forth to continue and extend the work of producing clean coal to take every possible precaution to maintain and improve the standard of Pennsylvania, West Virginia and Maryland coals, and it is felt that this work cannot be more effectively done than by a consistent program having this in mind and urged at all times by the wholesale coal dealers. A consistent policy of this sort can but prove beneficial not alone to the wholesaler, who will thus avoid complaints from his customers as to the quality of the coal, but will result in avoidance of the payment of high freight charges on refuse material and generally work a betterment of conditions for the operator by creating a firmer demand for his output, not to mention the economy of railroad facilities in times of car scarcity by avoiding the hauling of refuse matter. This consideration is of especial moment when taken with the effort which is to be made for a more scientific classification of coals in the pools of the Tidewater Coal Exchange.

Many of our members, in common with the trade generally, have suffered loss by reason of the changes made in assessing freight charges on coal moving through the pools in the early days of the Tidewater Coal Exchange, as well as those caused by the change in the rate.

The Association feels that this is a matter which should have vigorous handling looking to placing the work of adjustment where it belongs, certainly not upon the coalmen, and steps looking to this end are now in contemplation and will soon be put into effect.

Since the ruling of the Fuel Administration fixing the export and bunker margin of $1.35, members of the Association have had hundreds of thousands of tons handled through the agency of the United States Shipping Board, on a large part of which this margin has accrued; but as yet there has been no division of this fund among those interested. The Association purposes actively following up this matter with a view to effecting a distribution of the fund to those entitled to share in it.

The advantages to be gained by the extension of the system of trade acceptances in the coal trade generally are so great that the association will urge this matter strongly on its membership with the hope and expectation that it will be generally adopted.

With the beginning of the new year the gathering of information from members as to the standing of concerns with whom they do business will be taken up, and this information will be available to all members.

Occasion having presented itself for the taking up with the Barge Owners' Association of the matter of delays in the movement of barges by those who perform such service, other than the railroads, assurances have been given the representative of the association that the fullest and heartiest coöperation will be given to correct any such difficulties; and it is expected that when our members have troubles of this nature in the future they will be promptly remedied when handled through the secretary's office.

The coal trade has been so accustomed to sit silently by and permit to go unanswered the most vicious assaults upon its good name for business integrity, that it has now become the fashion among the muck-raking newspaper tribe to print anything that comes to hand, regardless of its relation to the truth. This has so long been the case that the public, in the absence of denials, has come to believe these libels. The officers and directors of the association feel that the time has come to make public refutation of these stories as they appear, and the endeavor will be to correctly inform the public on all such matters as they are brought up from time to time.

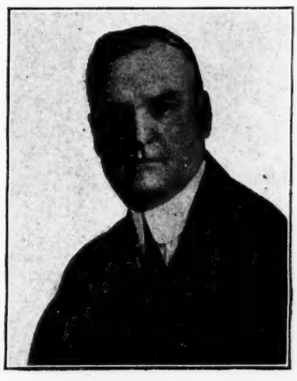
The ways in which this association can be of service to its members are almost limitless, and there is a most ardent determination with the membership, through the Board of Directors, to avail of those avenues of activity in the coming year.

Work of the Bureau of Mines During 1918

By VAN H. MANNING
Bureau of Mines, Washington, D. C.

A FEW illustrations of the work accomplished by the Bureau of Mines during the past year in connection with coal mining and fuel investigations are given in this article by Mr. Manning. The Bureau's most important duty was to add its small share toward aiding the country in winning the war. That these investigations were helpful and achieved their purpose have been evidenced by the numerous demands made upon the bureau and the comments of those who were in touch with its various work.

DURING the last fiscal year the Bureau of Mines devoted almost its entire efforts toward winning the war. An organization built up primarily for the greater safety of more than a million miners in the United States found upon the declaration of hostilities that it was thoroughly equipped by reason of its years of investigations to be of immediate assistance to both the army and the navy. Its experience with poisonous and explosive gases, such as are found in mines, suggested that its men might be helpful in developing the poisonous gases used in warfare. Its methods in first aid and resuscitation from the effects of mine gases were such that they could be applied in the medical corps of the army and were of great educational advantage to the fighting men as a whole. The sudden and tremendous demand for coal and the distressing experience of last winter, when the essential war-making factories were beginning to speed up in necessary supplies, indicated that the bureau's studies in the utilization of fuel with greater efficiency would come into important use. In fact, with the experience acquired, and its wide knowledge of mining, milling and metallurgical practice throughout the United States, the bureau was in a position to conduct many special investigations that had military importance and to cooperate with the various agencies that were participating in the great task of converting the country from one engaged in peaceful industry to one seeking to throw its overwhelming strength into the struggle for the preservation of democracy.



VAN H. MANNING

Perhaps the most notable work of the bureau during the war was its development of a great laboratory in Washington for the study of the gases used in warfare. The work the Bureau of Mines is doing on poisonous and explosive mine gases, the use of rescue apparatus and masks, the exploring of noxious atmospheres, and methods of resuscitating persons overcome by bad air had its beginning under the Government about ten years ago. Early in February, 1917, when war between the United States and the Central Powers seemed inevitable, the bureau called the attention of the War Department to the organization and facilities that the bureau already possessed for the study of poison gases, gas masks, etc., and offered these facilities to the War Department for such work. At a conference between representatives of the War College and of the Bureau of Mines, the War Department gladly accepted the offer of the bureau and agreed to support its work in every possible way.

The Director of the Bureau of Mines immediately started investigations of these war problems, and until July 1, 1917, carried the work along with bureau funds. The first work was on the development of gas masks. On July 1, 1917, the staff consisted of 50 paid investigators, and the work had expanded from gas mask research to the study of poison gases and other chemical products used in warfare. In order to enlist the cooperation of the universities and research institutions in the United States, personal visits were made to practically all of the important ones. The response was most gratifying, and some extremely valuable work has come from these universities and institutions.

This gas warfare work was started through the small nucleus of men who had been engaged in gas study in connection with the mines. Before it was finally turned over to the War Department at the close of the fiscal year, this laboratory had grown until it employed a force of 1700 chemists.

The Bureau of Mines can fairly claim that because it started this work on gas warfare and received the hearty support of the army and the navy departments, the National Research Council, state, educational and private institutions, the country is months ahead of where it would otherwise have been; American soldiers have had gas masks and gases with which to combat the enemy. Further, the developments in gas mask manufacture by the Surgeon General's office of the army, in gas manufacture and gas proving-ground tests by the Bureau of Ordnance, and the chemical warfare program of the navy, including the use of smoke screens, shells, toxic gases, etc., are results of this experimental work.

It is sufficient to say that through the energy of the research organization of the bureau the large-scale production of toxic gases was far ahead of the supply of shells.

As to the work done by the Bureau of Mines on the gases of warfare, the Advisory Chemical Board said officially: "The efficiency, success, fine spirit and enthusiasm under the leadership of the Bureau of Mines is a matter upon which we wish to congratulate the bureau, as well as upon the splendid group of unselfish, self-sacrificing men who carried on this arduous and dangerous work. The organization is complex and delicate, but well articulated and working with an efficiency and enthusiasm which have impressed us greatly."

It was soon learned that the engineer regiments, if they were to take part in tunneling work, would need the aid of an efficient mine rescue breathing apparatus. The bureau felt that the Gibbs apparatus, the develop-

ment of which had been in progress under its direction for several years, had been shown to be superior to similar devices for use by men entering poisonous or irrespirable gases. The use of the apparatus was recommended to the army for men engaged in sapping and mining operations. Since the Gibbs apparatus had not been manufactured commercially, contracts were entered into by the Engineering Corps of the army, with a certain manufacturing company of high standing, to furnish apparatus for the army and to the public under license from the Bureau of Mines.

At the request of the Ordnance Department explosives problems were undertaken. Many of these investigations were for the purpose of ascertaining the relative sensitiveness of explosives to frictional and direct impact.

DEMONSTRATING THE EFFECTIVENESS OF THE GIBBS BREATHING APPARATUS IN GASSY MINES

Many problems arose involving substitutes for the scarcer and more expensive constituents of industrial and military explosives. Because of the growing scarcity, through military requirements, of certain ingredients used in industrial explosives, it was thought wise to undertake the testing, for mine and quarry use, of a long-known but little tried explosive—liquid oxygen in a cartridge with carbonaceous matter, fired by ordinary caps or detonators. Results of tests in driving the Simplon Tunnel, in Switzerland, had been successful, but the explosive could not be obtained then at a price to compete with dynamite. However, the method was revived in Germany in 1914 soon after the war began, and in 1915, according to a German mining paper, was being used in three mines in Upper Silesia at costs per unit of coal blasted equal to that obtained with dynamite at 12, 13 and 15 cents per pound. American observers in Germany before the United States entered the war reported that liquid oxygen explosive was then being used extensively for general blasting.

To obtain information as to the strength of the liquid oxygen explosive and the best methods of use, a series of tests was made in the bureau's laboratory at Pittsburgh, carrying and soaking apparatus was made, and favorable tests were conducted in a quarry. Results showed that a mixture of liquid oxygen (85 per cent. oxygen) with carbonaceous and absorbent material was equivalent in strength to 40 per cent. dynamite. The chief difficulty in use is that the liquid oxygen evaporates so rapidly that the cartridge must be used immediately after dipping in the oxygen, hence further investigation is needed to determine the best way in which the explosive can be used practically in mines and quarries.

Work was also done and a report prepared on the use of stenches as a warning in mines. Electric gongs have been used as a means of signaling fires or other serious danger, but have not proved wholly satisfactory. Hence, the use of a stench in the compressed air delivered to all parts of a mine, where it would escape either from leaks or in the exhaust of machines, is offered as a substitute for the electric signals. The minimum concentration at which odors of a number of stenches could be detected in a current of moving air was determined in the laboratory, and the more promising stenches were tested at the experimental mine. The results ob-

tained indicated that this method of signaling will be of great value for warning miners and in future may be the means of saving many lives.

At the request of the War Department, the bureau conducted experiments with microphones and geophones, listening devices, which have been in use to a certain extent during the war to disclose the location of enemy artillery and to detect the presence of enemy mining operations. These investigations were so satisfactory that the bureau has determined to use these instruments in connection with rescue work. As these devices record air and earth waves, it is thought that they will be of value at mine explosions in determining the location of men who may be entombed and thus facilitate their recovery. The fuel problem was one of increasing importance as the war proceeded. During the summer and fall of 1917 the growing realization of a possible fuel shortage brought a large correspondence and many requests from the public for advice and for special direction in fuel problems. The need of more information written in a popular style on fuel subjects was partly met by new publications. In September representatives of the bureau took part in a speaking campaign through Tennessee, the object being to arouse the manufacturers of that state to a realization of the necessity of using coal more carefully.

TESTING LISTENING APPARATUS TO BE USED IN MINES TO LOCATE ENTOMBED MINERS

A considerable part of the time of the chief mechanical engineer was spent at Washington in conference with representatives of numerous organizations undertaking fuel propaganda. For a time it seemed as though too many organizations would undertake to advise the public on fuel problems, and it was feared that this advice would not be properly coördinated and hence would be apt to perpetuate many fallacies regarding the use of fuel. Many of these organizations were giving much heed to methods of presenting information and little thought to what was to be presented, assuming that essential information regarding methods of using different fuels with most efficiency could be obtained at any time.

In order to meet an evident need the bureau endeavored to act as a central source of technical information and to see that the matter being given to the public was not contradictory or inconsistent. Many manuscripts from all sorts of organizations were submitted to the bureau for technical criticism; they ranged from those suitable for publication as Government documents to those that were of temporary usefulness in newspapers and magazines.

In order that the bureau might better perform its function of advising Government organizations in fuel matters and do this in such a way as to command a wider support, an effort was made to obtain the advice and coöperation of the engineering societies, and the engineering council was asked to appoint a committee advisory to the Bureau of Mines. This committee later became a general committee on fuel conservation of the engineering council.

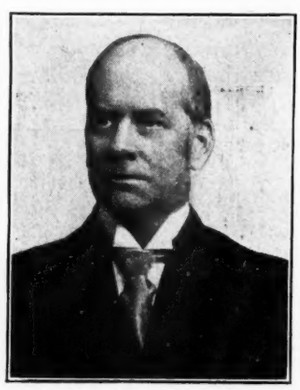
It soon became evident that of the many organizations desiring coöperative connection the United States Fuel Administration was the only one likely to persist. In the early period of building its organization, the United States Fuel Administration referred questions of economy in the use of fuel to the Bureau of Mines, and for some weeks a large correspondence addressed to the Fuel Administration was handled by the bureau. With the development of the conservation section of the Fuel Administration under its own engineers, the bureau continued its relations in an advisory capacity as fuel saving. The bureau also arranged for coöperation with the Society of Heating and Ventilating Engineers. The fuel division of the bureau was also called upon to assist the Emergency Fleet Corporation in the designing and baffling of boilers suitable for the new vessels. As a result of the investigation of one type of boiler used on a certain class of ships, the boilers were so changed that six tons of coal did the work formerly accomplished by seven tons. It is not unnatural to expect that the savings instituted will continue to bear fruit in the months to come.

Severance of Alsace-Lorraine Will Have Effect on Industry

The impending severance of Alsace and Lorraine from Germany, and their return to France, likely will have an important bearing on industry, as these provinces are rich in important minerals. The smelting of the iron ore production, especially of Lorraine, involves large quantities of coke. The old exchange arrangement between France and Germany, whereby German coke was supplied to France in return for ore supplied to Germany, will likely undergo important changes. The reason France smelted little of the ore from these provinces probably was due to shortage of fuel; large quantities of this ore were exported. In the future, trade arrangements will likely undergo radical changes and the coke necessary for the reduction of these ores may be shipped from England. Both France and Belgium's coal mines have suffered severely due to Germany's destructive policy, and a rationing of raw materials among the needy nations may be arranged by the more fortunate possessors of such supplies.

Anthracite Industry in 1918

By EDWARD W. PARKER
Director of the Anthracite Bureau of Information, Philadelphia, Penn.



E. W. Parker

IN SPITE of adverse conditions such as in no previous time in its history has beset the anthracite industry, the production of hard coal in 1918 was maintained to at least 99 per cent. of the maximum yield of the region, that of 1917. It is estimated by the Anthracite Bureau of Information that including the coal sold locally, the colliery consumption, and the output of the Bernice basin, the production of anthracite in 1918 amounted to 88,815,000 gross tons, as compared with 88,939,117 tons reported by the U. S. Geological Survey as the output in 1917. The first of the adverse conditions that affected the industry in 1918 was the almost continuous zero weather that, beginning early December, extended practically without interruption through January, February and March, seriously interfering with the operation of the breakers and with surface transportation. Notwithstanding the abnormal weather conditions, however, production during these three months was well maintained, February shipments making the second best record for that month in the history of anthracite mining, while March made the record for any month, with shipments amounting to a little over 7,275,000 tons.

Frozen switches, car wheels and water pipes, snow drifts and other troubles incident to the worst winter in the records of the weather bureau were overcome, for following the wage bonus granted by the supplementary agreement of November, 1917, the mine workers had determined to make 1918 the record year of anthracite production, and thus further increase their earnings. This determination was encouraged by mine operators, who in addition to spreading "win the war" propaganda among the mine workers, expended millions of dollars in mechanical equipment and labor-saving devices in order to increase production.

Shortage of Labor in Anthracite Mines

The record made in the first three months of the year, showing an increase of more than 600,000 tons over the same period of 1917, would have been maintained and the production for the year would have shown a gain over the preceding year of from 2,000,000 to 2,500,000 tons, had the labor situation remained normal. But army and navy enlistments and drafts, and the lure of high wages and easy terms of employment in shipyards and munition plants, particularly those working on the iniquitous "cost-plus" plan, wrought havoc to the labor supply of the anthracite mines, it being estimated that not less than 33,000 men left the mining regions during the spring and summer months.

Those that remained, however, true to their determination to make coal win the war, continued to maintain the production equal to, and in fact, slightly in excess, of the previous year, until October, when the spread of influenza in epidemic and virulent form so reduced the effective labor supply that production fell off sharply, the shipments in that month being 835,000 tons less than in the corresponding month of 1917. November shipments showed a further decrease of 1,268,654 tons as compared with November, 1917, so that not only was the gain made in the first months of the year wiped out, but a decrease set up in its stead. By December the effects of the influenza had about disappeared, and production was at approximately the same rate as in December, 1917. The shortage of labor and the epidemic were responsible for a loss in possible production to such an extent that an anticipated increase of approximately 2,500,000 tons, based on the record for the first three months of the year, was changed to a decrease of about 135,000 tons.

The production efficiency per man employed in 1918 was worthy of particular notice. The average number of men employed during the year probably did not exceed 155,000. In some months it was considerably below that figure. These 155,000 men produced 88,815,000 tons of anthracite.

Government Control of Coal Industry Beneficial

The year 1918 was unique in the annals of anthracite, as in bituminous coal mining, in that it was a full year of practically complete Governmental regulation of distribution and prices. In many respects this control was beneficial, and was particularly so as compared with the preceding twelve months. At the beginning of Governmental regulation in the summer of 1917, the public was led to believe that prices would probably be reduced, as a result of which many postponed laying in their winter's supply. Prices, however, were not reduced, but on the other hand, as a result of the wage advance in November, were increased 35c. a ton. The mistake of not purchasing in time was dearly paid for, as, due to the necessities created by the entrance of the United States into the world war, the demand for all kinds of fuel became acute; and in addition to this an unusually severe winter set in at an unusually early date, resulting in extraordinary demands for coal which the mines were unable to supply or the railroads to transport. Famine and panic conditions existed throughout the entire winter of 1917-18 and much inconvenience and some suffering resulted.

It is hardly necessary to discuss at length the "heatless Mondays" and other radical measures adopted last winter for the purpose of conserving fuel. It is worth mentioning, however, that probably the most salutary effect of the action of the Fuel Administration in this regard was bringing to the mind of the people a realization of the fact that the United States was actually at war, a fact that many did not at that time fully appreciate. It was one of the first lessons and a good one, and it laid the foundation for the plans of anthra-

cite and bituminous distribution in 1918 that have been carried out with signal success.

Early in the spring of 1918 the task of working out the problem of distribution was placed in the hands of a committee. The preliminary work of this committee was the obtaining from all anthracite producers and distributors a record of the tonnage conveyed to every community in the United States during the coal year from Apr. 1, 1916, to Mar. 31, 1917, and upon this record the basis of the proposed distribution for the coal year 1918-19 was worked out. It was quite evident from the start that some decided, not to say radical, readjustments in the disposition of the country's

ALLOTMENT OF DOMESTIC ANTHRACITE COAL YEAR 1918-19 COMPARED WITH DISTRIBUTION IN COAL YEAR 1916-17

	1916–1917 Distribution (Gross Tons)	Allotment 1918–1919 (Gross Tons)	Increase Per Cent.	Decrease Per Cent
New England States:				
Maine	556,683	660,000	18.56	.....
New Hampshire	314,945	375,000	19.07	.....
Vermont	316,850	330,000	4.15	.....
Massachusetts	5,027,993	5,689,000	13.15	.....
Rhode Island	664,008	800,300	20.53	.....
Connecticut	1,952,900	2,476,700	26.82	.....
Total New England States	8,833,379	10,331,000	16.95	.....
Atlantic States:				
New York	14,169,809	15,855,300	11.89	.....
New Jersey	4,961,622	5,460,784	10.04	.....
Pennsylvania	6,815,650	8,059,700	18.25	.....
Delaware	223,503	245,853	10.00	.....
Maryland	933,889	1,027,317	10.00	.....
District of Columbia	517,760	665,800	28.59	.....
Virginia	256,000	102,400	.....	60.00
Total Atlantic States	27,878,233	31,417,154	12.69	.....
Central States:				
Ohio	585,626	246,250	.....	57.95
Indiana	710,274	284,110	.....	60.00
Illinois	2,215,122	1,750,585	.....	20.97
Michigan	1,589,002	1,201,000	.....	24.42
Total Central States	5,100,024	3,481,945	.....	31.73
Northwest States:				
Minnesota	1,071,532	990,000	.....	7.61
Wisconsin	1,181,926	1,024,000	.....	13.36
North Dakota	249,314	200,000	.....	19.78
South Dakota	207,416	166,000	.....	19.97
Total Northwest States	2,710,188	2,380,000	.....	12.18
Trans-Mississippi States:				
Missouri	129,289	.....	.....	100.00
Kansas	15,907	.....	.....	100.00
Nebraska	130,273	.....	.....	100.00
Iowa	352,496	.....	.....	100.00
Total Trans-Mississippi States	627,965	.....	.....	100.00
Embargoed States	137,966	.....	.....	100.00
Railroad Supply	2,481,754	2,481,754	.....	.....
Canada	3,856,021	3,602,000	.....	6.59
Miscellaneous Exports	51,930	51,930	.....	.....
Army and Navy Camps and Cantonments	.....	600,000	.....	.....
Total	51,677,460	54,345,783	5.16	.....

fuel supply, both as to sections and uses, were necessary, and this was particularly true in regard to the prepared or domestic sizes of anthracite. It was not deemed necessary or advisable to place any regulations on the distribution of the steam sizes, except for some restrictions on the use of No. 1 buckwheat. This has become somewhat of a domestic fuel and its use as such is steadily increasing.

The plan of distribution of the domestic sizes as worked out by the committee and approved by Dr. Garfield, was announced in an address by Mr. Dickson, chairman of the committee, at a meeting of the National Coal Association in Philadelphia, May 29, 1918. It showed the necessity for material increases into the New England and Middle Atlantic states, in order to meet the needs of expanded population in those regions, due to the increased activities of war-materials plants, shipyards, etc. In order to provide for this, shipment of the domestic sizes of anthracite was prohibited into all states south of the Potomac and Ohio Rivers, with the exception of Virginia, and into all states west of the Mississippi, except North and South Dakota and Minnesota. The allotment to Virginia was materially reduced as compared with the shipments made to it in the basic year, shipments to the Central States were reduced by approximately 32 per cent., those to the Northwestern States by a little over 12 per cent., and to Canada by 6.6 per cent.

Subsequently the allotment to Virginia was increased by 65,000 tons, Iowa was given 145,000 tons to be distributed in the northern part of the state, and a small allotment was given to the northeastern section of West Virginia.

So efficiently has the committee carried out its program of distribution that the Northwestern states had received their full supplies before the close of lake navigation, New England in nine months had received nearly a ten-months' supply, and at the end of the calendar year coal was moving freely into those communities whose quotas had been held back somewhat in order to provide the Northwest and New England with fuel before winter weather prevented. The situation has been materially aided by the mild weather that has so far prevailed this winter and which has been in striking contrast to the winter of 1917-18. The new year opens with no reported suffering because of a shortage of anthracite, and with excellent promise of sufficient supplies and adequate transportation facilities to meet all current needs, a condition radically different from that of a year ago.

Public Wanted Any Kind of Coal

In January, 1918, the public was clamoring for any kind of coal; size made no difference and white ash was as good as red ash, and red ash as good as Lykens Valley; the cry was for "anything that was black." At this writing the consumer is demanding stove and nut almost exclusively, and stipulating the grade as well. It is quite evident to those familiar with the anthracite trade that had it not been for the effects of the influenza which curtailed production to the extent of approximately 2,500,000 tons, there would be more anthracite on the market today than it could readily absorb. Even now in many sections the steam sizes of anthracite coal are literally a drug on the market.

During the last two months of 1918, prices for anthracite have been higher than at any time since the Civil War. The advance in price, however, has not inured to the benefit of the operators, but has been absorbed entirely by the increase in wages given as a war bonus with the approval of the Fuel Administrator in November and made retroactive to Nov. 1. In fact, the returns on the capital invested in the anthracite industry have probably been less in 1918 than under normal conditions. It cannot be said that the Fuel Administration has been partial to the anthracite operators. Prices have been strictly held to the added cost of production in labor alone, without allowance for the increased cost of supplies, and other added expenses due to war conditions.

In November, 1917, when the second war bonus was granted, it was estimated that the average increased cost per ton would be 45c., and the Fuel Administration

was requested to allow that much to be added to the price. It permitted an advance of 35c., and although it was shown that the total average cost had been increased 78c., instead of 45c. following the November, 1917, wage increase, no allowance was made for it in adjusting the price following the new wage bonus in November, 1918, other than to permit the steam sizes to take the same advance as the domestic sizes. This was a questionable benefit, since at that time the steam sizes and become an oversupply and were being stocked in the storage yards of some of the larger companies. The industry absorbed the difference, and in addition assumed practically the entire cost of its own regulation by the Fuel Administration.

Readjustment Problems of the Coal Industry

BY ERSKINE RAMSAY
Birmingham, Alabama

ERSKINE RAMSAY

FORTUNATELY for mankind the work of making war is over and the reconversion of business to a normal basis should be done on some plan which will give the least possible shock to financial and industrial life. The transition from peace to war was quite painful, and unless the problems now confronting us are skillfully handled there is every reason to expect that the change back to peace will be equally as troublesome. The coal business is confronted with a serious situation; this comes from the fact that the coal operator during the war—from patriotic reasons, though knowing it was not good business—did his full duty and expended enormous sums of money in pushing development. Owing to this unusual development, made to win the war, the mine capacity is now far above the normal output of prewar times, and the capacity will further increase as the boys return home and resume their usual work. The present demand is not sufficient to take the output when running full. In the past such a situation always resulted disastrously for the operator. Before the war many mines were operated at a loss and unless prompt and effective steps are taken, this condition will return.

It may be said that the public is not interested that any particular line of business should be operated without loss. With coal it is certainly different, as unprofitable mining with the necessity of low production costs and expenditures does not permit of the best methods of mine working being employed. Under such conditions necessary modern development and equipment required for economical mining and relatively complete recovery of coal cannot be provided. The more economically coal is mined and prepared, the cheaper the public will get its supply; as coal is one of the country's most valuable natural resources, conditions should be maintained which will insure the recovery of as near 100 per cent. of the coal as possible.

It is just as unfair to the country as a whole to permit coal to be sold at prices below the cost of production as it is for coal operators to take advantage of opportunities to make the consumer pay exorbitant rates; a way should be devised to avoid both such situations. We all remember how Mr. Peabody wisely started a scheme of voluntary price regulation, which work was later admirably carried on by Dr. Garfield, Director of the Fuel Administration, backed with full legal authority under the Lever Act. It will be a calamity to permit the abandonment of such war regulations before the signing of peace and before the National Coal Association, the United States Chamber of Commerce or some other competent agency works out an effective plan of regulation for submission to Congress, and which will insure stable prices and conditions, and friendly relations between business and government. The coal business has suffered greatly in the past by the railroads using their car supply as a bait for obtaining prices below the cost of production. In many cases the railroads have arbitrarily named prices and practically said "this or nothing"; when low prices were thus forced on the mines it went a long way toward pulling the prices on other things below cost.

The coal people of this country, in order to avoid wasting our coal deposits, must endeavor not to repeat the harmful practices of the past, which did great damage to both capital and labor.

The hundreds of thousands of men and women engaged during the war in making the many things required by the men at the front will now be compelled to secure other work. This readjustment of labor will necessarily call into play our greatest resourcefulness to successfully meet its difficulties and problems.

British Recapturing Business

BRITISH shipping interests are already making a great drive to recapture the ocean carrying trade which they were forced to relinquish during the war. According to information obtained recently in local shipping circles, British freight rates to South American ports have been reduced so heavily since the armistice was signed as to increase substantially the normal disparity between rates from Liverpool to South America and rates from New York to South America. As one instance it was stated by a member of a leading New York firm that the rate on general merchandise from Liverpool to Brazilian ports is now $10 a ton, or 66⅔ per cent. lower than the New York rate to the same ports, whereas before the war the difference was approximately $2 a ton, or 40 per cent. Advices received here are to the effect that the Liverpool rate to South American ports is around $15 a ton, against a range of $25 to $27.50 a ton for shipments from New York to the same ports.

Activities of the National Coal Association During 1918

A Resume of the Efforts Put Forth by the Association to Secure the Co-operation of the Bituminous Coal-Mining Industry with the Government in Its Prosecution of the War Program, and an Indication of What the Association's Work May Be in the Future

BY J. D. A. MORROW
General Secretary, National Coal Association

A YEAR ago the National Coal Association was just getting under way in its effort to secure the fullest coöperation between the bituminous coal-mining industry and the government in the prosecution of the nation's war program. That effort occupied the attention of the association throughout practically the entire year. A brief review of what the organization accomplished in this respect is therefore quite appropriate. At this time also, with the association, the industry, and the nation facing the problems of peace and a world permanently changed in many ways, it is equally appropriate that we indicate briefly the direction which the association's work conceivably may take under these new conditions.

J. D. A. MORROW

A year ago the public had a right to expect that this industry would do its utmost to coöperate with the United States Fuel Administration, so that this nation and its allies might have the necessary quantity and quality of coal needed for the successful prosecution of the war. They also expected that this output would be placed in the hands of those who could use it most effectively for the same purpose.

The bituminous coal-mining industry has made good in meeting this expectation. It has produced a record tonnage estimated at 587,500,000 tons during the calendar year, more than 318,000,000 tons of which have been produced in the last six months of the year. Moreover, this tonnage has gone where the government wanted it to go, in full accordance with the plans of the Fuel Administration, the War Industries Board, the army and the navy.

The National Coal Association does not by any means claim all the credit for this memorable achievement. It has been the means, however, through which it was possible for Dr. Garfield at all times to keep not only fully in touch with the industry, but to have its thoroughgoing assistance and support. It was by utilizing in large degree existing machinery, built up by the constituent associations of the National, that the distribution plans of the Fuel Administration were carried out so successfully. Many of these local associations turned over their offices to the use of the Fuel Administration, including their secretaries, offices, employees and advisory committees. In brief, by utilizing these organizations in the industry, the Fuel Administration was able promptly to organize effective distribution machinery, relying throughout on the services of practical men who knew their own particular localities most intimately.

The record production of bituminous coal in this year was possible largely because the National Coal Association united all its energy with that of the Fuel Administration to remove every obstacle in the way of increased output, to increase the efficiency of the mine management, and to exert all pressure possible in order to produce coal. The result is historic. To me, it is just as remarkable a story as that of shipbuilding in the United States. Mr. Hurley and Mr. Schwab had a new industry to create. They were handicapped by many disadvantages and trials because it was new and had to be created from the ground up, but they also enjoyed the immense advantages of this same condition. They had every opportunity to revolutionize a little, mediocre, hand-to-mouth industry simply by applying the well-known principles of large scale manufacturing. That concept was one of striking genius, but the application of large-scale, standardized quantity production, not at all new in American business, produced miraculous results in a short space of time.

On the other hand, the bituminous coal-mining industry lost approximately 100,000 of its men to the army and still more to other industries; and with this reduction in its operating force it was called on to produce coal at the rate of 52,000,000 tons per month, which was 6,000,000 tons a month beyond the previous high record. Its task was to accomplish this result with 100,000 of its younger and finest employees absent from its ranks. Moreover, when this call came it was already a splendidly organized industry. The bituminous coal mines of the United States were by all means the finest in the world. They were better equipped with mechanical devices than any other. They were operated with all the practicable and tested advantages of American industrial achievement. This was a vastly different proposition from that of the Shipping Board. Beating the coal production record of 1917 was very much like asking a runner to beat a 10-sec. mark for 100 yards; the performance of the Shipping Board was much more like asking a trained sprinter to beat a 15-sec. record for the 100 yards.

Nevertheless, in the face of these conditions, which should be clearly understood to appreciate the magnificent response of the bituminous coal-mining industry to the nation's demand for coal, the production for the calendar year broke all previous records; from July 1 to Oct. 1, when peace negotiations and the influenza checked production, the output averaged approximately 55,000,000 tons a month, or at the rate of 660,000,000 tons a year. On Oct. 1, in spite of the handicaps of the beginning of the year, coal production was measurably up with war demand, and even had hostilities continued through the winter and requirements for coal for war needs continued as anticipated, everyone in Washington was confident that the bituminous mines would have produced the full tonnage asked of them before the coal year had ended.

There were moments, however, in the spring and summer when it seemed to be an open question whether the country would have as serious a shortage as last winter's or a more serious one. Every energy of the industry was then turned to maximum production. A census of bituminous mine employees was taken, revealing more than forty nationalities; an educational campaign was started in nine languages; and more than 12 tons of printed matter was distributed by the National Coal Association alone, through local associations and other agencies, to the miners. And the industry made good.

I dwell on this achievement of the bituminous coal-mining industry because we all take it too much as a matter of course. We are too accustomed to its tremendous achievements year by year to weigh properly such a record as it has made during 1918. It is the kind of thing that Lowell meant when he spoke of the "miracles of the commonplace." As this article is being written the directors in a meeting, at which prominent operators from all parts of the country will be present, are working out general plans for the activities of the Association under the conditions of reconstruction and peace. The task here is to make sure that the industry is amply equipped with the information and legitimate assistance that it may derive from a national federation of local associations, in such an organization as the National Coal Association.

NOT only has the National Coal Association assisted the soft coal industry during the last year in a truly remarkable fashion, but it has awakened the industry to a new sense of its dignity and power. For the first time the bituminous coal operators now have a national viewpoint and a national organization that has made itself known and respected throughout the nation. It has been the means of gaining for the industry a public recognition that was never accorded to it before. With a successful working out of the many plans now receiving the attention of the members of the association will come a finer spirit among the operators themselves.

In years gone by, one of the chief weaknesses of the industry was its lack of accurate information concerning market conditions. Hundreds of bituminous coal operators were strikingly ignorant of costs, selling prices, stocks and other market conditions. In consequence, they and the industry were at the mercy of rumors, uncertainties and deliberate falsehoods. Other leading industries of the nation, however, had made it their business to equip themselves thoroughly with the fullest kind of information that affected the production and marketing of their products. The individual member of these industries therefore was able to decide his production and marketing policies intelligently, and on the basis of definite facts and figures. On the other hand, the bituminous coal operator all too often decided his production plans and marketing policies on incomplete or incorrect information. To remedy this former weakness of the industry is a great undertaking, but it will receive the fullest consideration of the board; if it seems practicable some action will be taken to give the members of the National Coal Association and its constituent local associations the fullest possible information regarding market conditions.

A thoroughgoing knowledge of costs is recognized as the foundation of conservative conduct of any business. In this respect also the coal industry in years gone by his been wofully lacking. Such information is of equal importance with facts concerning market conditions. The National Coal Association has recently organized a Cost Accounting Department which is working in conjunction with a Cost Accounting Committee (of which T. T. Brewster, of St. Louis, is chairman) in an effort to devise with the help of the industry, the Treasury Department and the Federal Trade Commission a thoroughly sound and acceptable definition and classification of costs which may become the basis for uniform cost accounting in the industry.

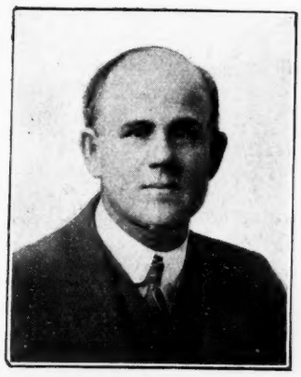
If such a system can be worked out and established, it will save both the operators and the government much inconvenience and expense in making reports to Federal agencies, and it will also educate hundreds of operators to a better understanding of their production and marketing costs that they ever have had before. If such information, combined with the facts regarding marketing conditions, can be put generally in the hands of the industry through the medium of the National Coal Association and local organizations, bituminous coal operators will compete with each other for the first time in the United States on a basis of intelligence instead of ignorance. The future work of the association, therefore, lies along constructive lines for the permanent lifting of the industry onto a new plane of participation in American business. It means a coöperation with a half-dozen departments of the government. It means better coöperation through the industry. It implies a finer spirit among the operators themselves and it means a great deal of detail work to carry these efforts to successful realization. In the past year, the association has made a record of which it may well be proud, but its real work is only starting.

[As this issue of *Coal Age* goes to press reports come to hand of the meeting of the National Coal Association at Washington, at which bituminous operators from every section of the country took steps to place on foot the plans referred to by Mr. Morrow in the foregoing article.—Editor.]

Coal-Mine Fatalities in 1918*

By ALBERT H. FAY
Mining Engineer, Bureau of Mines, Washington, D. C.

PRELIMINARY reports received from the state mine inspectors for the first eleven months of 1918 show a reduction of about 7½ per cent. in the total number of fatalities in the coal mines as compared with a like period for 1917. The total number of fatalities reported to the Bureau of Mines to the close of November is 2281 in 1918, as compared with 2471 in 1917. The principal decrease is in gas and coal-dust explosions. In these two items alone there is a reduction of 211 fatalities. There is also a reduction of 25 fatalities due to mine cars and locomotives, and a slight reduction due to hoists, cages and skips. A slight increase is shown in fatalities due to falling coal or rock, the use of explosives and electricity. With no serious disasters for the month of December, the net decrease for the year should be about 190, as indicated in the accompanying table.



ALBERT H. FAY

Complete figures for the number of men employed during 1918 are not yet available, but on account of war conditions the number undoubtedly will be less than in 1917, when there were 757,317 men engaged in coal mining. The number of days worked during the year will be in excess of previous years, and the tonnage won will tend to offset shortage of labor. In 1915 the average number of days active were 209; in 1916, 235; and in 1917, 251.

Concerning 76 of the 112 fatalities due to mine explosions, sufficient information was obtained to show that 51 per cent. were due to explosions caused by open lights and 37 per cent. were due to shots. The electric arc was responsible for about 6 per cent. This emphasizes the need of abolishing the open light in all doubtful mines, more care in the use of explosives and more thorough inspection and installation of electric lines.

In 1918 there were reported only three mine explosions and one mine fire, in each of which more than five men were killed, representing a total of 52 fatalities as compared with eight similar disasters in 1917 resulting in 256 fatalities. This indicates a considerable advance in the use of safety devices and appliances for the prevention of mine explosions.

FATALITIES DUE TO GAS AND COAL-DUST EXPLOSIONS

Cause	Number Killed	Per Cent.
Due to open light	39	51.3
Due to defective safety lamps	2	2.6
Due to electric arc	5	6.6
Due to shot	28	36.9
Due to explosions of powder	2	2.6
Total	76	100.0

A chronology of these accidents and their results is as follows: May 20, Villa mine, Charleston, W. Va., mine fire, 13 killed; Aug. 7, Harmar mine, Harmarville, Penn., explosion, 5 killed; Aug. 28, Burnett mine, Burnett, Wash., explosion, 12 killed; Sept. 28, North mine, Royalton, Ill., explosion, 22 killed. Fatalities due to electricity at coal mines increased 13 during the year, or about 15 per cent. Forty-six of the 87 fatalities may be segregated as indicated in the accompanying table, in which 28, or 61 per cent., were due to coming in direct contact with the trolley wire; 11, or 23.9 per cent., were due to contact with mining machines, while feed wires were responsible for 10 per cent. Fatalities such as these call for better installation of trolley wires, locating them out of reach of workmen, or, when this is not practicable, guards should be provided that will make it almost impossible for one to come in contact with the live wire. Electric haulage roads should not be used as manways where it is possible to travel along other entrances and exits. Mining machines and machine feed wires should be inspected frequently to see that the insulation is in perfect condition.

FATALITIES DUE TO ELECTRICITY

Cause	Number Killed	Per Cent.
Direct contact with trolley wire	28	60.9
Bar or tool striking trolley wire	2	4.4
Contact with mining machines	11	23.9
Contact with machine feed wire	5	10.7
Total	46	99.9

Accidents Due to Cars and Motors

Of the 431 fatalities due to mine cars and locomotives, the inspectors' reports covering 229 of them show

COAL-MINE FATALITIES FOR THE FIRST ELEVEN MONTHS OF 1918, COMPARED WITH THE SAME MONTHS OF 1917

Underground	January-November, 1917	January-November, 1918	Increase or Decrease
Falls of roof (coal, rock, etc.)	1,066	1,008	+21
Falls of face or piller coal	68	147	
Mine cars and locomotives	440	431	—9
Gas explosions and burning gas	172	73	—99
Coal-dust explosions (including gas and dust combined)	151	39	—112
Explosives	10	110	+9
Suffocation from mine gases	12	15	+3
Electricity (shock or burns)	74	87	+13
Animals	10	6	—4
Mining machines	16	18	+2
Mine fires (burned, suffocated, etc.)	2	18	+16
Other causes	70	53	—17
Total underground	2,182	2,005	—177
Shaft			
Falling down shafts or slopes	23	24	+1
Objects falling down shafts or slopes	5	9	+4
Cages or skips	16	9	—7
Other causes	4	3	—1
Total shaft	48	45	—3
Surface			
Mine cars and mine locomotives	86	70	—16
Electricity (shock or burns)	16	17	+1
Machinery	43	38	—5
Boiler explosions or bursting steam pipes	6	6	0
Railway cars and locomotives	16	23	+7
Other causes	74	77	+3
Total surface	241	231	—10
Grand total	2,471	2,281	—190

*By permission of the Director of the Bureau of Mines

sufficient details to make the following classification possible:

FATALITIES DUE TO MINE CARS AND LOCOMOTIVES

Cause	Number Killed	Per Cent.
Switching and spragging	3	1.3
Coupling cars	8	3.5
Falling from trips	27	11.8
Run over by car or motor	97	42.4
Caught between car and rib	48	20.9
Caught between car and roof while riding	9	3.9
Runaway car or trip	37	16.2
Total	229	100.0

It will be noticed that fatalities while riding on cars are still common, the number of deaths by falling from trips being 27, and those due to being caught between car and roof while riding being 9, or about 15 per cent. of the haulage accidents. Accidents while riding can be reduced by enforcing more strict regulations with reference to riding on the cars.

Another important item under haulage accidents are fatalities due to being caught between the car and rib, representing about 21 per cent. These can be reduced by widening the haulageways, or by cutting additional safety niches, at intervals of 50 to 100 ft., where it is not practicable to widen the entire haulageway. The figures in the table show that 16 per cent. of the haulage fatilities are due to runaway cars or trips. There is therefore still room for mechanical improvement to prevent such accidents.

FATALITIES DUE TO EXPLOSIVES

Cause	Number Killed	Per Cent.
Transportation of explosives	8	15.1
Charging	4	7.5
Suffocation	3	5.6
Drilling into old holes	2	3.8
Caps, detonators, etc	1	1.9
Returned too soon	13	24.6
Premature shot	6	11.2
Sparks from match, lamp, or candle	7	13.2
Delayed blast	2	3.8
Shot breaking through rib or pillar	7	13.2
Total	53	99.9

The total number of fatalities arising from explosives was 110, showing a slight increase over the previous year. Of this number 53 may be segregated as indicated in the table shown above.

The Business Outlook in America

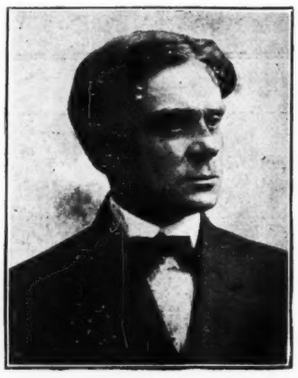
BY CHARLES S. KEITH
President Central Coal and Coke Co., Kansas City, Mo.

I BELIEVE the United States is in for several years of prosperous conditions. Here are the facts upon which I predicate such a conclusion:

1. Europe's supply of raw material, which she does not herself produce, has been depleted.

2. Farm products in the United States have been at a high price since 1914 and our farmers never were more prosperous.

3. Due to the price of wheat having been guaranteed for next year, and the world's shortage of fat, the prices of farm products will remain at a high level during 1919.



CHARLES S. KEITH

4. Because of the immense shortage of shipping, Europe will purchase her supplies from the nearest sources of production. A ship can make three round trips between New York and Liverpool in the time required for one trip to Australia.

5. The United States is the only country financially able to assist the nations of Europe in their work of reconstruction and replenishment.

6. In the United States today the delayed building amounts to more than $3,000,000,000.

7. As each month passes more ships will be released from the work of transporting troops from France.

8. The present stocks of practically all commodities are low. In the matter of lumber only 46 per cent. of the normal supply remains at the mills, and but 75 per cent. of the normal supply remains in the hands of retailers.

In the face of such truths it is not logical to conclude that business is going to be poor.

Pulverized Coal for Metallurgical Use Should Possess Little Sulphur

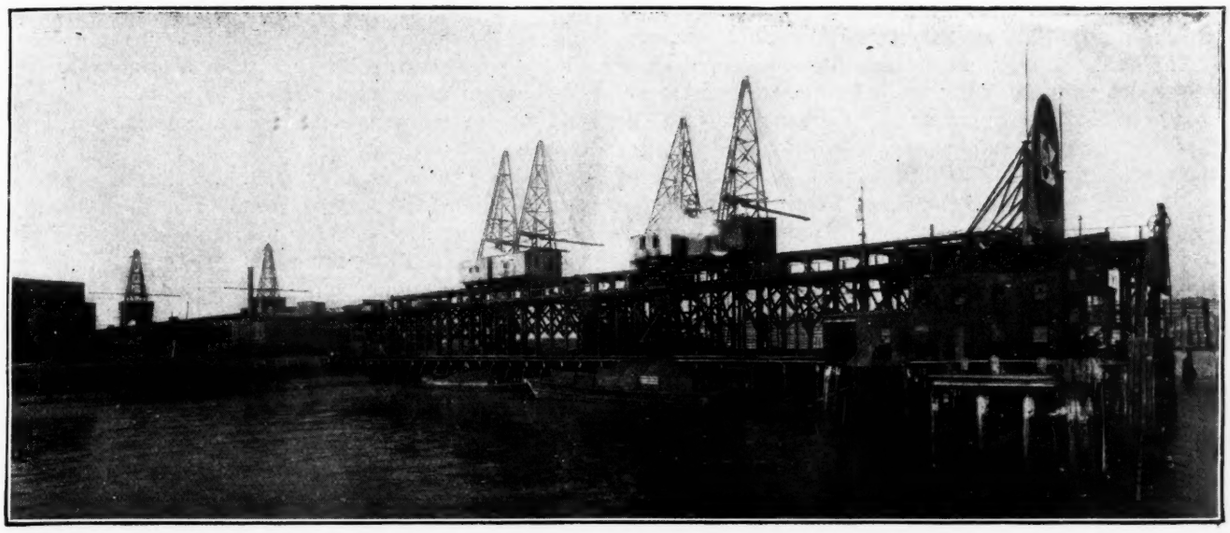
Pulverized coal for metallurgical use should have a low percentage of sulphur, for the sulphur of the coal has a remarkable way, especially in the open-hearth furnace, of entering into the finished product. The ash in anthracite, coke breeze and lignite, speaking generally, will slag at the same temperature as the ash in bituminous coal. Therefore, the furnace temperatures may rise higher than the fusing temperature of the ash in the fuel.

The reason why the fusing temperature of these fuels is not so important as the fusing temperature of bituminous coal is because, in general, the combustion of the other fuels when they have been pulverized does not produce so high a temperature as does pulverized bituminous coal. In a well-designed furnace, temperatures about 2250 deg. F. (1235 deg. C.) will be obtained with anthracite, coke breeze and lignite, and slags will be formed.

Much emphasis has been laid on burning all the coal to carbon dioxide. To do this a higher temperature is sought by diminishing the amount of excess air. But these high temperatures cause ash, slag and clinker to form on the tubes, checker work and furnace walls, and this is detrimental—*A. V. Adamson, Bulletin, American Institute of Mining Engineers.*

Trade Conditions in New England in 1918

By G. G. WOLKINS
Boston, Mass.



LIGHTERAGE PLANT OF THE METROPOLITAN COAL CO., SOUTH BOSTON, MASS.

THE distributing factors showed a splendid spirit of coöperation throughout 1918. The Fuel Administration had complete charge of the industry, but the trade loyally responded to every appeal, and there was gradually built up an understanding of ways and means that led to the heaviest tonnage New England has ever known.

The first half year there were grave doubts whether this territory could possibly get its quota. A breakdown was feared, and more than once the strong arm of the Government had to strike a balance; but in review 1918 will stand out distinctly as a year of maximum effort. The bill came high, but never was railroad service so adequate; never were so many ships; and never was so great a reserve piled up. In the light of balanced production New England industries were indispensable, and it was due to the remarkable teamwork of patriotic and capable men that this fact was recognized at Washington.

General Features

Confining our review to New England, there were situations and developments peculiar to the Northeast that ought surely to be included. To go beyond the intense cold that closed harbors and paralyzed train movement for days at a time, there was evolved the famous New England priority order of Jan. 3, designed to furnish an ample and continuing supply of emergency coal for distribution east of the New England gateways. Diversion of 1000- and 1500-car lots had already been accomplished en route to the Shippensburg bottle-neck, and to provide billing, etc., a unique system was devised. The New England wholesalers, all of whom were being regularly deprived of coal through intervening mandates of the fuel authorities, were invited to finance the whole arrangement, taking for their services, the credit risk, and mental suffering, a special indulgence of 15c. A staff was organized, something like 2,000,000 tons all told was handled, and now, a year later, the device is still in operation, for the straightening of accounts, Invoices were "allocated" as nearly as possible on an equitable basis; the merchant or "jobber" paid promptly and then looked to the consignee in each case for reimbursement. The scheme had many merits, not least among them the active interest it roused among trade veterans who might otherwise have sulked in their tents.

Another feature was the broadminded way in which distribution was effected, often without too much regard for decrees at Washington. Centers of population were not put out of business because their supporting industries happened for a time not to be on a "Preference No. 1 List," and good sense was shown in not interfering more than seemed necessary with the normal trade channels of supply. Early in January Boston was down to four days' reserve, and distracted retailers in several instances closed their doors to protect their property from angry householders. Distress was frequently averted by refraining from the wholesale diversions practiced in other sections. There was a weighing and balancing of the claims of different communities, a process in which experienced coal men were

RECEIPTS OF GROSS TONS OF ANTHRACITE COAL BY SEA AT BOSTON

	From Philadelphia		From New York Ports		Totals	
	1917	1918	1917	1918	1917	1918
January	32,019	10,122	65,042	20,600	97,061	30,722
February	16,575	21,754	45,619	24,082	62,194	45,836
March	69,375	68,966	91,652	39,349	161,027	108,315
April	44,689	34,132	87,511	66,923	132,200	101,055
May	41,985	41,111	78,455	99,860	120,440	140,971
June	51,332	28,644	87,627	104,290	138,959	132,934
July	53,299	31,934	90,767	101,943	144,066	133,877
August	50,274	46,411	92,850	79,776	143,124	126,187
September	57,425	4,825	85,188	106,064	142,613	110,889
October	28,696	5,569	73,733	81,502	102,429	87,071
November	28,185	2,448	63,149	72,829	91,334	75,277
December	.....	5,200	53,213	63,833	53,213	69,033
Total	473,854	301,116	914,806	861,051	1,388,660	1,162,167
1916	524,220		956,676		1,480,896	
1915	548,689		960,331		1,509,960	
1914	624,798		1,094,241		1,719,099	
1913	582,183		1,094,128		1,676,311	
1912	579,778		1,054,378		1,554,156	

in position to advise, and there was a general absence of that panicky disposition which could only have been disastrous. Coal was taken out of schoolhouses only when hospitals and families needed instant relief, and coal was withheld from important industries only when pumping stations and other vital necessities were operating on margins too narrow for the public security.

The bulk of the tonnage came through normal channels, much as usual, but a great deal more than the excess over 1917 was supplied as "emergency fuel." The increase from central Pennsylvania only made up for the zoning away of Pittsburgh output and the reduced volume from adjoining districts. The heavy movement over Baltimore piers during July, August and September was intended to replace coal usually furnished all-rail or transshipped at New York, as well as yield a part of that additional supply demanded for New England's absolute needs. The greater proportion of this emergency coal was furnished through the Shipping Board and other Government pool accounts at Hampton Roads, but in most cases after April and May it was shipped and invoiced by the usual trade agencies. Several of these shippers very largely increased their tonnage, while all-rail practically every New England house in the business showed a heavy shrinkage, after vicissitudes that for weeks at a stretch left the middleman high in the air. Many of the all-rail houses rebilled coal at invoice to themselves purely to hold customers in line, the fuel regulations having come in to prevent more than 15c. as compensation for a service often divided between two selling organizations.

The authority given fuel officials to requisition coal, a power often used only with regard to some specific case at that moment in view, resulted too frequently in disrupting normal, well-matured plans of distribution, and early in the year there was a marked tendency toward "emergency orders all-rail," much the less expensive route. When serious demurrage charges began to accrue on waterborne coal from Hampton Roads, the differential was in some instances $3, $4 and sometimes $5 per ton, but those New England consumers elected to pay the freight took their medicine rather more cheerfully than might have been expected.

In 1918 there were two well-defined periods, of six months each. In the first there was great anxiety lest the supply be interrupted. To get coal every expedient was tried. In May alone, notwithstanding the most binding of promises, the total loss was 530,308 net tons, as compared with May, 1917, an alarming figure when all estimates had been based upon heavy gains during the summer months. Ships were not to be had in sufficient number; submarine ventures were threatening; all the early programs fell short of being practical; there was wavering between state administrators and Washington as to what were to be made special cases, and what were to be left to individual action and to chance.

Receipts were steadily falling behind; there was need of cloth for uniforms, need for surgical dressings, shoes, gas masks, need for innumerable supplies to be had almost exclusively from this territory; and not until labor organizations and manufacturers' committees joined in shouting "No coal, no supplies," did there seem to be any effective response. At last, in July, ships appeared as out of the night, and coal in great junks, both by rail and by water, began literally to be thrown at New England. It was as if every unheard petition of months was suddenly answered, and in good measure, full up and brimming over. Enterprising industrials had used every means at command to get coal, and, as it seemed, every forlorn hope was now being made good. There is credit due the New England Fuel Administrator for perseverance during a trying season, but it should be remembered that among his associates in the Massachusetts Committee of Public Safety were gentlemen of far-reaching influence, who were able at the appropriate hour to turn the right key. And there came a time in September, when it took almost the same tremendous effort to get it stopped! For several weeks there was no Gargantua to turn off the spigot!

On Oct. 1 the official report charged Massachusetts with 19 weeks' supply, greater than any state but Minnesota. New England was plugged full; and for trade or market the balance of the year was nothing to talk about. Everything together, it is quite within bounds to add that never in twelve short months were there both famine and feast the equal of 1918.

In New England, as elsewhere, the mid-year change of outlook was due more than anything else to the great gain in car movement. The effective pooling of equipment made it possible to pass unbroken trains through the New England gateways. Thus the roads gave better service.

RECEIPTS OF GROSS TONS OF BITUMINOUS COAL BY SEA AT BOSTON, SHOWING PORT OF SHIPMENT*

	Baltimore		Norfolk		Newport News		Philadelphia		New York Ports		Totals (Coastwise)		Foreign†	
	1917	1918	1917	1918	1917	1918	1917	1918	1917	1918	1917	1918	1917	1918
January	73,854	41,238	240,422	182,079	96,131	22,750	31,544	8,004	5,092	10,237	447,043	264,308‡	24,612	17,334
February	28,393	44,102	206,088	237,412	56,939	47,570	3,459	8,653	4,838	4,433	299,717	348,030	27,706	20,334
March	61,522	60,244	305,606	395,411	66,840	38,149	4,198	7,588	4,198	6,319	442,252	442,252	22,664	15,556
April	58,015	53,454	328,193	319,106	42,397	13,600	.....	7,073	6,326	33,210	434,913	426,443	27,061	.....
May	68,104	88,540	276,394	420,332	38,780	49,537	.....	5,815	8,888	52,498	392,166	616,722	13,930	2,359
June	56,516	105,770	217,961	260,520	44,184	63,042	4,003	5,380	4,341	29,281	327,005	463,999	15,565	20,107
July	51,374	174,399	222,891	360,967	40,652	36,286	11,510	18,146	8,222	25,640	334,643	615,638	21,320	20,113
August	39,504	200,914	272,546	348,492	34,016	70,204	22,254	11,828	8,269	38,351	376,589	670,124	35,694	8,815
September	30,419	158,976	221,445	314,127	41,256	40,117	6,067	9,775	5,264	18,533	304,451	541,528	28,362	21,723
October	39,896	108,605	169,587	242,701	35,964	25,217	7,388	6,986	11,124	30,592	263,959	414,101	21,437	28,693
November	45,247	81,257	203,895	289,579	36,310	40,284	7,293	18,565	13,860	23,198	306,605	452,883	21,611	9,047
December	34,849	70,922	134,150	140,499	27,484	36,899	27,453	7,785	.....	13,834	223,936	269,939	15,650	.....
Total	587,692	1,188,421	2,799,178	3,511,225	560,953	483,655	125,169	115,598	80,422	286,126	4,153,289	5,525,967	275,612	164,081
1916		836,055		2,853,185		873,980		287,795		42,892		4,910,687		344,792
1915		1,172,431		2,212,530		680,929		403,927		24,604		4,610,312		440,615
1914		1,158,266		2,637,632		611,369		456,446		3,095		4,866,778		258,647
1913		1,164,514		2,485,679		737,647		553,573		3,274		4,944,687		269,659
1912		1,361,994		1,836,750		945,803		322,334		9,600		4,665,520		309,106
1911		1,576,397		1,218,391		921,220		381,961		3,776		4,101,745		26,861
1910		1,595,554		795,475		1,243,857		292,636		25,515		3,954,251		296,564
1903		481,111		314,505		596,439		.....		.....		2,081,819		1,226,134

* Courtesy of the Boston Chamber of Commerce, Statistics Department. † Almost exclusively from Louisburg, Cape Breton, except during 1903, when a large tonnage came from Great Britain to relieve shortage because of strike. ‡ Includes one cargo, 5,860 tons, from Charleston, S. C.

than consignees had ever known. The quota of 1,000,000 net tons monthly, Apr. 1 to Oct. 1, was exceeded, and yet in June, following the two heaviest months, it was officially stated by representatives of the Boston & Maine, the Boston & Albany, and the New Haven, that, based upon movement at that time through the western gateways to New England, there could have been handled an additional quantity of all-rail coal into New England of 450 cars per day. Certainly this is eloquent of enlarged capacity on the part of roads that too often have found themselves overburdened.

That was precisely the case in January-February, 1918. Congestion at Maybrook, N. Y., one of the five gateways, was unparalleled; 4000 loaded coal cars were backed up beyond, and congestion in several of the mining districts was something tremendous. Divisions normally moving 2000 loaded coal cars daily had 10,000 on tracks, and the average haul per day was down to 12 and 14 miles. The loss of car service through extreme cold and the comprehensive diversion to tidewater of coal originally routed all-rail seemed to make it clearly impossible in February to get adequate shipments, even in what had always been considered rail territory. It was also made clear that requirements in New England were increasingly dependent upon ships. It was taking six weeks for cars to come through to points like Worcester, Mass., and this fact together with the long hauls to remote destinations had a distinct bearing on the number of cars forwarded.

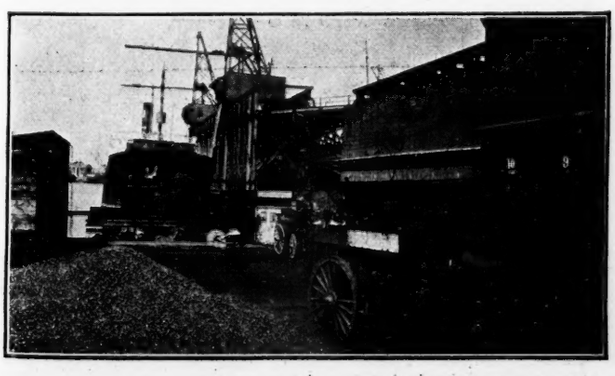
The Railroad Administration order of Jan. 3 requiring cars to be placed at designated mines in addition to the usual distributive share of the general car supply was a well conceived attempt to meet the emergency needs of a large number of important steam users in distress for dependable supply. Coal emanating on the Western Maryland and on the Baltimore & Ohio on a program of 200,000 tons annually was eliminated in June from all-rail movement upon the understanding it would reach New England by water through Baltimore and New York piers, a restriction that was not lifted until Dec. 20. In April the New England railroads were sending empties to the mines in an effort to build up fuel reserves, but apparently there was only one result—car shortage at the rehandling wharves at this end.

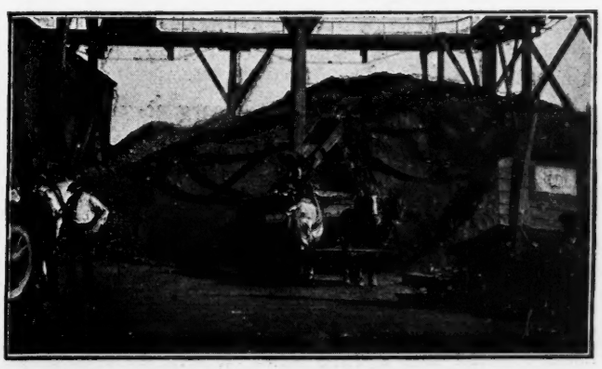
By May there was wonderful improvement. All operating embargoes against New England roads had been raised, and cars were coming through in eight or nine days to points like Worcester. Manifestly, congestion was being cleared up for the season, and yet so strong is the habitual cast of thought that there was constant talk throughout the spring and summer of "zoning" consuming territory as between rail and water deliveries. Much hard work was put into this proposal. A hearing was held in Boston on June 4 by representatives of the Railroad Administration, and various opinions sought as to where the eastbound limits of all-rail bituminous should be drawn when congestion via the Hudson River gateways should become so great as to relieve them by diversion to water routes. It was plainly stated that the meeting was for the purpose of drawing the line in advance of the time of need and the Car Service Section gave assurances there would be no difficulty in providing cars, the saving of car miles in this case being unimportant.

There was one point in the discussion, however, that might have been of revolutionary importance. By railroad men present it was stated "that shippers forwarding coal all-rail should be ordered to ship their coal to the same consignees by tidewater, or possibly to ship it to other consignees in the all-rail zone in New England, so that New England would not lose the coal"! In a measure this was carried through when Somerset, Upper Potomac and Fairmont outputs were zoned out, but the aggregate tonnage affected was relatively small and confined very largely to points within Connecticut. To have enforced such a limitation on coal from central Pennsylvania, tidewater handling facilities considered, would have raised hob with conditions. The marvel is that such a fallacy persisted so long, and the trade is fortunate there was enough good sense at Washington not to put it through. A similar attitude prevailed when most extraordinary and expensive efforts were made to get cars unloaded with lightning dispatch, while at the same time empties were stored for weeks on New England lines because the connecting roads could not take them away. Since June the mining regions most accessible to this territory have been glutted with cars.

RECEIPTS OF ANTHRACITE COAL BY RAIL AT BOSTON

	1917	1918
January	30,379	33,453
February	13,874	23,188
March	21,425	42,526
April	12,343	23,256
May	23,546	20,482
June	15,527	15,527
July	19,215	33,420
August	17,196	28,581
September	13,504	26,259
October	18,502	29,348
November	16,275	17,630
December	15,622	20,740
Total	217,408	314,410
1916	292,599	
1915	192,442	
1914	192,426	





VIEWS AT THE WHARF OF THE BURTON-FURBER COAL CO., EAST BOSTON, MASS.

The best opinion inclines to present methods of distribution, unrestricted as to destination, whether from gateways or from tidewater ports. The fact that the nearly 12,000,000 net tons received last year went to make up deficiencies by water should be reason enough for allowing coal to come through normal channels. The anxiety of operators during June and July over possible congestion at the gateways was not borne out. Everything was comfortably handled. Not one coal embargo was in effect on New England roads from Apr. 1, and the fact that rail movement decreased during the fall was due first to a saturated market and later to very largely diminished output at the mines. Certain statistical reports intimating 50 to 60 per cent. car supply in central Pennsylvania were based upon archaic car allotments, based not upon normal output but on 100 per cent. effective—that is, a mine-worker in every place the full working day. Such a Utopian state never existed!

Water transportation was similarly the cause of much anxiety. In March the situation in that respect was thoroughly canvassed by the Shipping Board and the conclusion was reached that from April to December inclusive to move the 16,000,000 net tons at that time estimated to be required from Hampton Roads and Baltimore the shortage of steam tonnage was something like 170,500 D. W. tons. The tonnage then in service was an uncertain quantity. Much of it was assigned for temporary use and was subject to withdrawal. Many of the bottoms in service were Dutch, Norwegian or other neutral ships, almost impossible to discharge without maximum expensive delays, and rehandlers had a most uncomfortable time of it. Gradually, month by month, the available supply was augmented by new lake-built craft and by additions like the "Tuckahoe," until in July all fears for scarcity of tonnage had been dissipated.

At weekly meetings with an advisory committee of coal shippers, all of them experienced and conversant with every phase of the coastwise situation, a representative of the Shipping Board acting in conference also with the New England Fuel Administrator assigned steamers for charter; and in these friendly gatherings organized to make the best possible use of cargo space and available coal the steps were taken which effectively distributed the bulk of water-borne coal during the crucial months last spring when too many mistakes might have spelled calamity. The arrangement was faithfully carried out to the end of the year. In September, when instead of 238,000 tons the steamer tonnage aggregated more than 400,000 tons, the shippers made just as loyal exertion to keep them in operation as in the spring they had made to place each ship where its cargo would do the most good.

The disparity in rates between all-rail and the water routes was never so glaring. Until June 25, rail tolls had been advanced only 15c. in ten years. The minimum rate from central Pennsylvania to Boston, for instance, was $2.60 (now $3.30) "to meet tide-water competition" when water freights were 50c.@75c. from Hampton Roads, and not $3.25, as in 1918. Output from West Virginia today has to stand $2 tolls plus $3.25 marine freight, and from central Pennsylvania via New York $2.15 tolls plus $2.50 marine freight, other charges applying in each case. The sum of tolls, water freight, and charges in each case compares with the $3.30 rate all-rail. The outlook for coal in 1919 turns very largely on the manner in which the differential is handled. Apparently it is up to the Shipping Board. They have withdrawn ships, but rates have not been modified.

ANTHRACITE RECEIPTS IN NEW ENGLAND (NET TONS)*

Steam Sizes

	Rail		Water		Total	
	1917	1918	1917	1918	1917	1918
April	56,055	214,473	43,493	36,672	99,548	251,145
May	57,954	229,506	38,062	50,770	96,016	280,276
June	64,611	264,907	45,645	48,867	110,256	313,774
July	72,753	256,663	60,404	69,975	133,157	360,722
August	83,322	256,663	69,638	69,642	152,960	326,305
September	64,284	189,292	28,200	23,007	92,484	212,299
October	71,676	124,813	25,465	21,686	97,141	146,499
November	64,385	68,102	27,672	20,432	92,057	88,534

Rail Receipts—Domestic sizes eliminated on following percentage basis as determined by reports received from agents at gateways: 1918, April, 74 per cent., May, 73 per cent.; June, 75 per cent.; July, 73 per cent.; August, 73 per cent.; September, 78 per cent.; October, 84 per cent.; 1917, April, May, June, July August, September, October, each estimated to be 90 per cent.

Tide Receipts—Domestic sizes eliminated as follows: Both coal years, April, 89 per cent.; May, 89 per cent.; June, 89 per cent.; July, 86 per cent.; August, 85 per cent.; September, 94 per cent.; October, 93 per cent. Basis of elimination was the record of anthracite dumpings at New York, divided into domestic and steam sizes, beginning June, 1918.

* Courtesy of New England Fuel Administration.

Pocahontas and New River Grades

Based upon the expansion in war industries and depleted reserve stocks, representatives of the Fuel Administration and the Shipping Board estimated in March that New England would require an increase of 15 per cent. over receipts in 1917, rather than the 30 per cent. mark previously set by the New England Fuel Administrator. The 15 per cent. figure meant that of the 30,000,000 net tons for the coal year, 16,000,000 would be required from Baltimore and Hampton Roads, the increase from these ports alone being figured at 6,500,000. The heavy movement of water coal was to be developed during the months from April to October, to allow for light movement the remaining months, but of course anything like this schedule was not reached. It was far in advance of what representative shippers could imagine as a probability, and the event justified their opinion. The Fuel Administration provided that a large share of West Virginia output, particularly from the smokeless districts, should be held for tidewater movement, and with some shuttling to take care of byproduct plants like the Hopewell powder plant, this part of the program was reasonably well adhered to.

The price disparity of 35c. between Pocahontas and New River was a notable feature of 1918. Until the latter part of 1917 the two coals were on the same basis,

ANTHRACITE RECEIPTS (NET TONS) IN NEW ENGLAND—TIDEWATER AND RAIL*

Domestic Sizes

	By Months, 1917	By Months, 1918	Cumulative, 1917	Cumulative, 1918	Cumulative Schedule of Requirements 1918 60 Per Cent.—40 Per Cent.	Cumulative Schedule of Requirements 1918 50 Per Cent.—50 Per Cent.
April	856,393	907,134	856,393	907,134	1,157,072	964,227
May	829,544	1,031,296	1,685,937	1,938,430	2,314,144	1,928,454
June	950,802	1,190,097	2,636,739	3,128,527	3,471,216	2,892,681
July	1,025,831	1,215,939	3,662,570	4,344,466	4,628,288	3,856,908
August	1,144,513	1,054,561	4,807,083	5,399,027	5,785,360	4,821,135
September	1,020,368	1,031,574	5,827,451	6,430,601	6,942,432	5,785,362
October	983,398	943,384	6,810,849	7,373,985	7,713,813	6,749,589
November	897,703	734,379	7,708,552	8,108,364	.....	.....

* Courtesy of New England Fuel Administration.

and also closely competitive. Had price been any consideration the ruling would certainly have upset selling arrangements of long standing and caused no end of confusion. As it was, consignees took either coal so long as bottoms could be found to move it and so long as there was room for it in storage.

The smokeless shippers never enjoyed a more lucrative year. Compensation was liberal, if not lavish; and coal was shipped in record volume.

High Volatiles

Throughout the year there was difficulty getting the higher grades for illuminating, byproduct and malleable iron purposes. A large number of New England plants had their source of supply in the Pittsburgh and adjoining districts, and in the Fairmont region. To all practical purposes these coals were excluded from this territory. Fairmont was allowed to come through the Tidewater Coal Exchange, but gas-coal consumers are never partial to "low-sulphur screened" coal that comes through a pool. There was an indifferent effort to reduce the tonnage of highest grade gas coals appropriated for railroad use in fast-train service, but very little came of it. One road alone in New England uses 150,000 for this purpose.

As an emergency measure in July 200 cars daily were ordered out of westbound shipments from the Kanawha

COST OF HIGH VOLATILE BYPRODUCT COAL—POOL 7, NEWPORT NEWS, VA.

F.o.b. mines, gross tons	$2.912
Purchasing agent's commission	.168
Rail freight, mines to Newport News, plus extra charge, paid to shipping board pool	.825
Marine freight	3.25
Demurrage and tax	2.83
Insurance	.069
Wholesale compensation, 23c. less 15c. per net ton	.0896
Discharging and weighing	.2163
Price f.o.b. cars, Boston, per gross ton	$12.5229

and other high-volatile sections on the Chesapeake & Ohio Ry. This was not so much a help to plants requiring illuminating or long-flame coals, for it was open to the same objections that apply on any coal pooled at Tidewater. Gas plants took more or less of this tonnage to make up arrears all-rail, but the bulk of it was delivered to steam plants on contracts originally written for Pocahontas or New River. The same circumstances were true of a large extra tonnage of Fairmont, Pool 34, moved via Baltimore piers.

The Westmoreland district was so heavily burdened with special orders for steel plants and the like that hardly better than 65 per cent. was averaged on contracts entered into with New England buyers. Consumption here, however, is now reduced and there is prospect that the remainder of the winter will find gas-coal requirements in much more comfortable shape than was feared.

Georges Creek

The tonnage of this once popular grade was practically nil in New England during 1918. Several thousand tons were caught in the Shippensburg diversion late in December, 1917, and the principal shippers responded to the New England order of Jan. 3, but thereafter deliveries were of no moment. The bulk of the coal, in Pool 1, at Baltimore, went either for export or for naval use. The fixed price for that region was not favorable to large output, and transportation ordinarily reserved for the movement coastwise of Georges Creek was diverted, often by order of the Fuel Administration, to load at Hampton Roads to help make up the deficiency there in cargo space the first half year. The large increase in receipts here from the Baltimore piers was due to Fairmont and other coals on the Baltimore & Ohio and Western Maryland thrown to Tidewater rather than all-rail. It is probable that in future Georges Creek in this market will disappear from the steam trade and be confined to smithing purposes.

Pennsylvania Grades

Central Pennsylvania was New England's most dependable source of supply during the lean season from January to June, 1918. It was the source of most of the coal shipped on the "New England order," the channel through which most of the emergency fuel came the first part of the year. As drawn at Washington the order called for 500 cars daily, and direct consignments for that number were furnished by the New England Fuel Administration; but on only one day did the actual yield exceed 300 cars, and the average for the 100 working days it was effective was little over 100 cars. That meant 500,000 tons, however, and in January, in particular, it averted what might have been some very acute situations.

There was also a fairly steady volume of emergency coal to the New York piers, most of which was used to relieve important needs inland from New Haven, New London and Providence. The surplus supply of box barges helped materially when motive power was short.

The great obstacle from a New England standpoint was the Preference No. 1 List and the drastic way in which Washington instructions were interpreted. This territory had a large number of preferred requirements, although in volume of coal used the needs were relatively small. Enormous industries in Pennsylvania were obviously entitled to preference, and it took no great effort on the part of anybody to get them on the list. Many important New England plants, however, were among the 10,000 or more represented in applications to the War Industries Board which were waiting action. Had this plan been followed implicitly, there would have been real disaster to many important industries and untold delays caused to the war program.

Happily, the Fuel Administration devised a new plan of distribution, early in June. The burden of deciding upon the disposition of what coal comes forward to any state was now shifted from district representatives to state administrators, following out the good theory that those on the ground were better qualified to exercise this function. On other accounts the previous program had to be abandoned. Steel and rolling mills had been favored with coal when small plants in New England had had to go without, although their output was just as necessary for war purposes, in many cases furnishing parts that were indispensable. Not enough emphasis had been placed upon "balanced production," and merely because coal requirements were relatively small was no reason for passing them over. In tons of material the output of Pennsylvania, for instance, is much larger, but in the number of men employed per ton of coal New England made a better showing. This territory was working from 65 to 75 per cent. on war

orders, and it was keen realization of necessity that so many officials high in the Government saw to it that New England got its share.

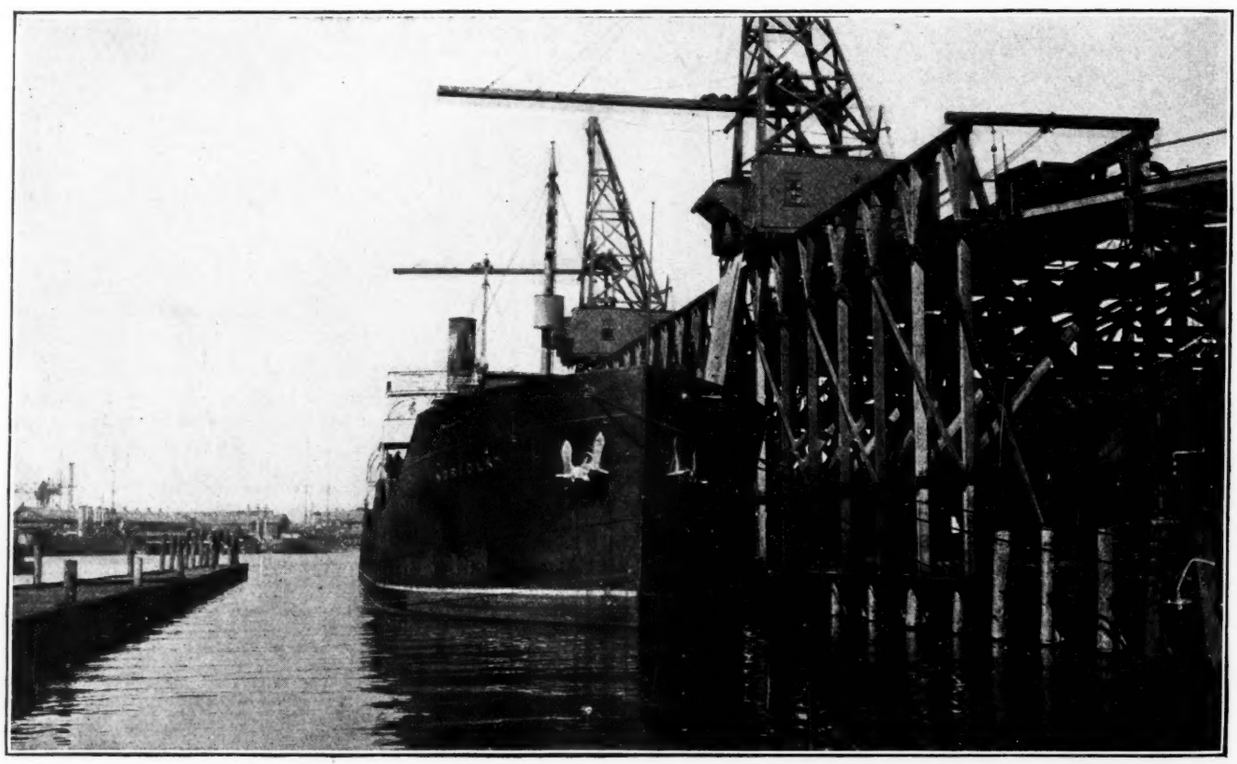
All through the season there were of course abundant instances of the abuse of regulations, price and otherwise. One of the most fertile fields for illicit practices was in the distribution of country-bank or wagon-loaded coal in box cars, a supply which seldom appears except in time of stress. Through illegal price exactions mine-workers were enticed away from standard wage operations and business flourished. To correct this situation and incidentally aid movement to New England all the wagon-loaded coal in box cars on the Pennsylvania R.R. in the central Pennsylvania district was taken over by the Fuel Administration and distributed at the scales by the district representative on consignments furnished by state administrators. This was effective July 22 and continued without pause until September, when a reduced movement to New England was in effect until Nov. 15. There were weeks when 800 to 900 box cars were sent to New England destinations. The method of paying cash on invoice on this coal through banks at Altoona was not calculated to discourage this movement, and it didn't! There was anxiety as to quality and greater anxiety to get the movement stopped, largely because of the 75c. extra price, and the tremendous volume of coal pouring in on New England from every direction; but it came, it was accepted, and it helped plug New England to the point almost of acute indigestion.

In August the all-rail passing figures mounted rapidly, and it was not until well into September that the flood began to subside. Exactly 83.5 per cent. of the rail bituminous for New England was scheduled to come from the central Pennsylvania district, the entire output of which, week after week, was in excess of 1,300,000 net tons. For his courage and initiative in carrying through a difficult program, the District Representative of central Pennsylvania deserves much praise.

A capable inspection force did particularly effective work in that district. Instances were many where cars for New England were withheld because of poor preparation, and more than a few careless operators have been taught that dirt and slate cannot be sold as coal.

By the end of the year the movement all-rail had dropped to 310 cars. The volume would probably not have been greater even had there been active request. It was a great year, and it remains to be seen whether another year will reach the same high mark.

There are so many uncertain factors in the outlook for 1919 that representative men in the trade are not only extremely careful about predictions, but they are reticent. They know that reserve stocks are larger than in any previous year on record; they know that practically every steam-user is figuring on less business; and they hear the extravagant talk about the future of fuel oil in this territory. All that is what everybody knows; but questions whether the Shipping Board will reduce coastwise freights or turn the commandeered steamers back to their owners and thus restore a "market rate," or whether the proportion of rail coal will increase, or whether buying will start in April or in July, or what will be the starting price—nobody knows, nor can anybody venture more than a guess. The disposition in New England, buyers and sellers alike, is to clean house and await developments. Who can say what sort of price the market will settle down to, the withdrawal of fixed prices and the present light output considered, and also who has a very clear idea today as to the offshore market, particularly in South America? These matters time alone will tell.



S.S. "NORFOLK" DISCHARGING POCAHONTAS COAL AT WHARF OF BURTON-FURBER COAL CO., EAST BOSTON, MASS.

What Well Known New York Coal Men Think of the Future—With Some Remarks on Coal Exports

TO OBTAIN an idea of what representative coal men believe 1919 will hold in store for the industry, *Coal Age* has invited comment from a number of large jobbers and shippers who maintain offices in New York City. The following statements are typical of the many answers received, and are reproduced to show the spirit of optimism possessed by men in the trade who are in position to know what they are talking about.

C. B. WYNKOOP, *President of Cosgrove & Wynkoop, Ltd.:*

IT IS odd to note the enthusiasm with which the average coal man of today discusses the possibilities of export and bunker business, while five years ago it would not have occurred to him to seek this outlet for his surplus production. A few of the big fellows had all of the bunker business, and the difficulties surrounding the export end—getting orders, arranging terms of payment, etc.—were so numerous that where an occasional order for export did come along, it was not given as much consideration as an order for a few cars from a little plant on Long Island burning less coal in a year than called for in the one export order. South America and European ports could only be grasped in a hazy sort of a way, and we could not adjust ourselves to the novelty of doing a mail-order business, and doing it in a way that would insure repeat orders.

If we show the same interest in supplying a suitable coal and rendering good service in every detail to the mail-order export customer that we do to the customer located on a line or tidewater point 30 miles from New York, America is destined to become the greatest exporter of coal in the world; and though the New River and Pocahontas coals for a time will undoubtedly come in for the lion's share, there is no reason why all of the better grade coals should not ultimately be in as great demand, if the coal man selling this coal will use the same judgment in the selection of the proper coal for each order that he would exercise for his line trade. In other words, when supplying the export customer, if the coal is to be used in power plants which are obliged to burn low-volatile coals because of their boiler conditions, smoke or other good reasons, and high-volatile steam coal is shipped because the price is low and that individual order will net a larger profit, the coal trade is not going to figure in the enormous amount of general export business scheduled to be taken care of by America.

Of course, at the present time only coals going into certain pools are permitted to be exported, and these pools have been selected not because they cover all of the good coals suitable for export, but because the coals in these pools are sure to be good; but as time goes on this list will undoubtedly grow.

It has been suggested that the coal trade organize under the provisions of the Webb law, in which case "the proper coal in the proper place," could be handled as well as a great many other problems that will present themselves as we get further into the business. Many other lines are already reaping the benefits from such organization, and it is to be hoped that the coal trade will get together in some way to take advantage of the opportunities extended to us, as this is a proposition that requires teamwork and coöperation to a greater extent than has ever before been put up to the trade.

Good service and fair dealing in the export end of the coal business must be the watchword of all who are in it, as one irregular transaction will place the entire American coal trade in a bad light. Unfortunately the people of most foreign countries judge the entire American public by the few with whom they come in contact.

In most of the South American countries there are local English, Spanish and German newspapers, all of them constantly boosting the products of their mother country; but America is obliged to do her boosting through individual exporters, and this same condition holds good in many other countries.

It is going to be an uphill climb right from the start, as we will have lots of competition and plenty of criticism, and although it may hurt a little at the start, it will ultimately do us good. The organization of an export trading association that would absolutely guarantee quality and service and assist in securing proper legislation to insure better shipping facilities would almost immediately make us a most important factor in world trade.

C. ANDRADE, JR., *Treasurer of the Matlack Coal and Iron Corporation:*

PRIOR to Aug. 1, 1914, Germany and England divided between them the bulk of the export coal trade to South America. When the war started, Germany, driven from the seas, lost the business overnight; England for a time held it. But England was unable to furnish all that South America required. Thereupon South America turned to the United States; and the United States began in a small way to make a few shipments. To meet this situation, England established an ocean freight differential from Cardiff to South America below the going rates from Hampton Roads to South America, hoping in this way to meet or overcome the competition of the American coal. For a while there was keen and open competition between the English and American coals for the common markets of South America. Then slowly, but very surely, the American coals began to displace the English coals. Under free competitive conditions, the American merchant with his American coal won out.

It was not until the late summer and fall of 1917 that the United States Government began to exercise control over the situation. Three methods of control were devised:

First—The President issued his proclamation of August, 1917, fixing the $2 mine price for coal, and ending with the following beautiful thought: "Under them the industry should nowhere lack stimulation." As everyone knows, the $2 price, instead of stimulating production, curtailed it to such an extent that a few months later Dr. Garfield had to declare his famous

"heatless Mondays." The Fuel Administration had to raise coal prices before the country got back to normal production.

Second—The Shipping Board began to fix ocean rates. Instead of fixing a final rate and letting it stand, it made three or four successive reductions at intervals of a week or so apart, and thereby prevented the closing of many charters—the ships lying idle in many cases while cables were exchanged in an endeavor to keep up with the rapidly changing rates.

Third—The War Trade Board instituted a system of export licenses. The Export License Bureau of the War Trade Board has stood the ordeal of actual trial, and has come out with a clear record of patriotism, impartiality and real efficiency.

Thus, the export of coal was subject to the tripartite regulation of the Fuel Administration, the War Trade Board and the Shipping Board. At the outset the Shipping Board failed to coördinate its activities with those of the War Trade Board. That is to say, the fact that an exporter had secured an export license from the War Trade Board was no warrant whatever that he could secure a ship from the Shipping Board to carry the goods so licensed.

In February, 1918, the Shipping Board began to allocate a large amount of tonnage to one particular party in Rio. In May, 1918, the Shipping Board took over all the free tonnage and thus rendered it impossible to secure any vessels in the open market. In June, 1918, the Shipping Board concluded an agreement with Great Britain by which the British agreed to keep out of Rio, and the Shipping Board agreed to keep United States coal exporters out of the River Plate market.

American Exporters Out of Market

As a result of that agreement, the American coal exporters to the River Plate market have had to sit for the last six months and see vessels sail into Hampton Roads for British account, take American coal for British account, and sell that coal to the customers of the American exporters in the River Plate market. The situation was further aggravated by the drastic charter forms that were forced on the exporters by the Shipping Board.

American merchants had the export coal business of the world in the hollow of their hand, and it was struck down by the inexpert interference of their own Government. Whether or not America can regain this lost export coal trade is a question. It is a demonstrated certainty that she cannot gain it, or even hold it, if the regulation of it is left to the Shipping Board. There is just one thing that will enable the coal exporters to get back their lost trade: Free right to export, and free control of shipping by private owners. Government control is a demonstrated failure.

WILBUR A. MARSHALL, *of W. A. Marshall & Co., President of the Lincoln Coal Co. and chairman of the Bituminous Operators Committee of the Wholesale Coal Trade Association of New York:*

TO PREDICT with any degree of certainty the outcome of the coming evolution in the coal trade is a difficult matter. Predominating interest centers around the question of price, the labor situation, the possibility of securing foreign markets, the local demand and, with consumers, the question of quality.

There has been a great fear that coal prices would tumble and that there was a danger we would get back into the old rut of doing business without profit. Upon giving a little study to the situation, it does not appear that there is particular reason to fear such a condition. Giving consideration to the fact that there is today a tremendous stock of coal above ground, and that there is still an excess demand for the high-grade gas coal and for all of the higher grades of smokeless coal and that there is a greater desire on the part of consumers than ever before to secure quality, does it not stand to reason that the bidding for quality would cause good coal to advance if the price restriction was removed?

Poorer Grade to Bring Lower Prices

Taking another viewpoint: The Fuel Administration in fixing prices ignored entirely the question of quality, which resulted in the fixed price for Westmoreland gas coal, possessing a high standard of quality, being much lower than the high sulphur coals of the Fairmont region. With the removal of price restrictions it is readily seen that there will be an immediate advance in the price of coals from the Westmoreland district. That there will be a reduction in the price of poorer grades is evident, and it is quite in order with good economics. Reduction will depend largely upon quality and the decrease that may be brought about in the cost of production, which leads us to the consideration of labor.

Labor has been and is now independent. Wages in the coal-mining industry top any other that we know of, time employed considered. Miners are averaging upward of $8 per day of eight hours, and the daily average is nearer seven hours. The cheapest sort of labor generally gets 49½c. per hour, and usually works ten hours per day. Labor has announced that it will not accept a reduction in wages, and in the coal mines it is doubtful if there will be any material reduction in the rates for some time to come. Most mines have been and still are working with from a 50 to 75 per cent. supply of miners and many company men 60 years and over in age are doing work formerly done by young men. As a result the overhead is a burden on cost. This cost, through efficiency, will be cut with the return of younger men, except for one possibility. Many of the miners are of Austrian, Hungarian and Polish nativity, and a number of them have signified their intention of returning to the old country during the present year to see members of their families. Most of these will return in due time, but there is danger of a shortage for this year at least.

There is a constant and persistent effort being made to spread the control of unionism, with its usual effect in the way of petty strikes and interruptions, all for the sake of recognition or the gaining of special pay for some detail of work. This situation prevails mostly in Maryland, West Virginia and Kentucky, formerly nonunion districts. Short-time mining will be the best cure for this situation.

All Eyes Turned to Export

Everyone has his eye on the export situation, either with the hope of securing a part of the business or trusting it to take the excess of supply and help maintain the local market. Too much of this business cannot be expected. In the first place other commodities will be in as great demand as coal, and the available tonnage, being limited, must be divided. There is and will be a market for export coals of the standard export grades known to foreign buyers, but the limitations on shipping facilities will probably be a disappointment to even the shippers of those grades. It is doubtful if any material headway will be made by the novices during this year at least.

In this line consideration must also be given to the effects of trades accomplished by British traders, who have already by agreement and otherwise tied up a large amount of the business that might be expected to come naturally to this country. As a result English coal will be supplied when available and the overflow be bought and shipped by the British from here. Fuel oil for foreign use will probably be a large factor of competition than heretofore. The increased use of this fuel will depend largely upon the speed with which tank stations are installed, but in all probability no time will be lost in this direction.

Local demand will be limited until present stocks are consumed, which will be around Apr. 1. Following that there should be a healthy demand, especially for high-grade coal. There will be a limited demand for the poor grades, and the chances are that small mines opened during the past year and producing small amounts of poor coal will close down by the hundred.

As a final résumé, we look for a period of three months of uneasiness and uncertainty, following which we expect to see a good steady business at profitable figures, probably above the present fixed prices on good coal with a reduction in the production and price of poor coal ranging from slightly under the present fixed prices down to the cost of producton, and in some cases less than the cost of production, depending entirely upon quality.

C. C. HARRIS, *of G. D. Harris & Co.:*

A FORECAST of the future, so far as it affects the coal trade, is a difficult undertaking owing principally to the number of "ifs" that one is confronted with at every turn. I would not presume to predict the conditions which will be existing a year hence. Some look for unparalleled prosperity, while the darker side of the picture can be seen by many intelligent thinking men. However, there is no question but what with proper legislation, particularly as respects foreign trade, and with a fair settlement at the peace table of foreign relations, our coal trade certainly should not experience for many years to come the demoralized conditions which existed prior to and just after the war started. Neither should it be expected that the inflated market due to war necessities of other countries should ever have a recurrence here.

As to the immediate future, I am willing to venture the opinion that the same holds forth no encouragement for the ordinary coal man. The consumers of coal are readjusting their business to peace conditions. There is no question but what there is a decided slowing up of production all along the line, and even were it not for this process of reducing operations, the average consumer of coal is not under the strain and stress that he has been to negotiate for his future supply of coal. He will endeavor to secure his supply on better terms to himself than he has enjoyed for the past many months.

The consumer of coal who has been producing essentials for the Government has, of course, been taken care of by the Government; his every want and requirement has been supplied. He has obtained coal from here, there and everywhere, and has paid all kinds of prices for it. His stock yards are full to overflowing. He may not have the coal he wants, and he may be disappointed at the price paid. His first impulse therfore is to use up and get rid of these stocks. It is a well known fact that many consumers who required 1000 tons to see them through the winter have had 2000 tons shipped to them. Obviously this consumer is out of the market for months to come. Perhaps the concern that has supplied him for years has not had the privilege of shipping him one pound of his coal. This coal concern, therefore, has to find other customers.

An argument frequently heard is, that granting the essential consumer has been supplied and taken care of as stated above, he now becomes a non-essential, and the former non-essentials are now first-class preferentials. The logic of this is quite true, and it would be reasonable to expect that these former non-essentials were all of them desperately in need of coal. Is this a fact? Answer, It is not. Many non-essential plants which have no license whatsoever to have a stock of coal on hand today are filled up and not interested in any purchases at this time. It is very evident that the huge production of bituminous coal, together with the forcing upon the market of small steam sizes of anthracite and culm, has supplied all the essential plants; and there has been enough overflow to take care of the former non-essentials. The situation in the great consuming market of New England bears out this statement, and therefore until stocks are reduced it is going to be difficult for coal operators and distributors, except those producing the very highest grade of special coal, to find a ready market for their product.

PREDICTS PERIOD OF ACTIVITY

I do not say that there will not be a period of activity; the moral effect of bad weather, poor transportation and inadequate car supply will cause some apparent shortages, and will also produce a feeling of uneasiness in some directions, so that at times during the next three or four months there will be a good demand for coal and prices will be maintained. Should the Government restrictions be removed, there will probably be a little more freedom of action for the coal distributors who may be tempted to send out their salesmen once more and endeavor to move tonnage toward their usual customers, obtaining for the same a fair margin of profit above that which they are obliged to pay for coal.

With the continuation of Government control it is my opinion that it will be difficult to move tonnage. The operator naturally will endeavor to get the full price; the consumer will likewise very naturally not desire to pay any more, and the distributor will experience difficulty in finding his proper place in the movement of coal from the mines to the consumer. All of this may have a tendency toward the elimination of the wholesaler from the situation. This, if accomplished, would be a genuine disaster to all those concerned.

There is no good reason why the wholesaler cannot hold his place if he takes ordinary business precautions to protect his interests. This can be done through organization and coöperation, by taking advantage of the experience of other lines of trade, practically all of which are strongly organized, and following the lead of many other branches of industry, which have been in similar circumstances before this. Trade organizations are held in respect by all interests, and I believe looked upon with favor by the Government.

ARTHUR F. RICE, *Commissioner of the Coal Merchants Association, of New York City:*

IN ATTEMPTING to forecast the conditions likely to prevail during the coming months, we may think of some things as reasonably certain. While the Fuel Administration will automatically cease to exist with the signing of the peace treaty, there is little likelihood of that occurring before the end of the coal year, and Federal control will probably continue at least to that time.

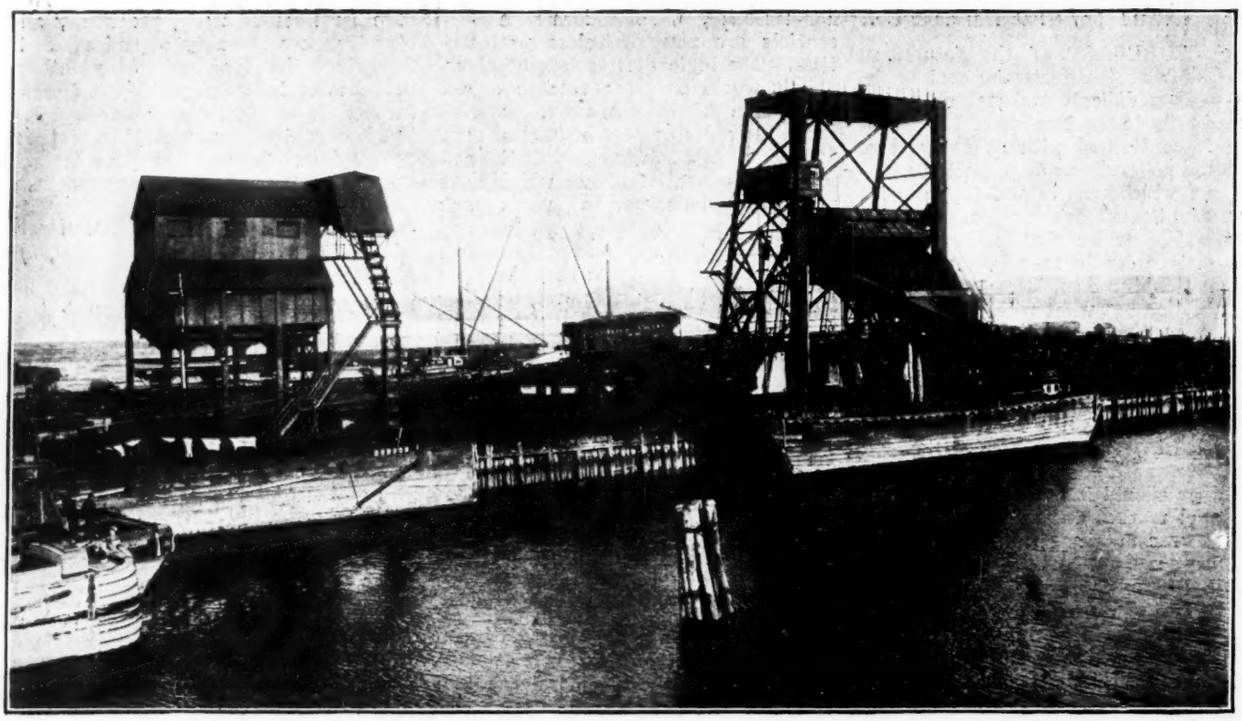
The increased production of bituminous coal, in the face of a decreased demand both here and abroad, will probably give the market all the soft coal it can digest—and some to spare—with a tendency to lower prices. With regard to the egg, stove and chestnut sizes of anthracite, the indications are that the absolute needs of the consumers will be met and that there will be an abundancy of broken and pea. On Nov. 26 there were 15,000 tons of broken and 45,000 tons of pea in the hands of the dealers in Manhattan and The Bronx, with practically no sales for these sizes. Normal conditions may be a long way off, but as they begin to arrive the prices for coal, which are unreasonably high, will come down of their own weight, and with a more plentiful supply the differential between "company" and "independent" coal will be apt to efface itself.

The things we shall have to guard against are a renewal of unrestrained competition and the old habit of scrambling for business without due regard for price or profit. And yet the situation is full of encouragement. Never in the history of the trade has there been such uniformly good feeling among the dealers, every one of whom is a member, in good standing, of this association. All have learned the cost of doing business, all have discovered that it can be transacted at a profit without violating the laws of decency and common sense.

War conditions and the Government have controlled our industry for the past two years, but there are strong indications that hereafter we shall be better able than ever before to control it properly ourselves.

Europe as a Market for American Coal

"Ships and freight rates are the governing factors in the matter of supplying Europe with American coal," says Walter E. Hope, who studied conditions on the other side. The situation in France is critical. The mines at Lens were completely destroyed. From one to three years will be required to reopen these mines. Frenchmen pay $17 a ton for household coal. Industries are charged $25. At least one-half of the coal supply of France must come from outside her borders. American coal is wanted, and a market is waiting if reasonable shipping rates are arranged.



LEHIGH VALLEY RAILROAD CAR DUMPING MACHINE AT PERTH AMBOY

New York Coal Trade in 1918

By R. W. MORRIS
Brooklyn, N. Y.

THE anthracite market opened the new year in vastly different condition than it did a year ago. Instead of record-breaking temperatures and a lack of coal, the weather reminded one of early fall temperatures, while there was enough coal in one place or another to take care of the situation for several weeks to come. Due to the insistent demand and the urgency of the Fuel Administration and coal dealers, everybody who was in a position to do so had at least a part of his winter supply of fuel in the cellar bins; and in most instances at least two-thirds of the orders placed with the local dealers early in the spring had been delivered. In some cases the remaining one-third had been cancelled by the consumer on the ground that because of the mild weather so far experienced it would not be needed.

The first of the year saw business at practically a standstill. Dealers had some orders on their books, but there was no urgency about deliveries, and the dealers were not anxious to pay the full price for "independent" coal when it was expected that with the lack of demand they could soon secure "company" product at 75c. per ton less than they would have to pay for "independent" product.

The retail dealers began the new year by granting an advance in wages to their drivers and chauffeurs of $6 per week, in addition to a nine-hour day. This was the second advance granted within twelve months, and naturally resulted in an increase in the retail price of coal.

It was early in the year that the Board of Aldermen adopted an ordinance giving the Mayor power to confiscate all surplus coal in the city wherever situated, the price to be paid to the owner to be fixed by the courts. If any coal has been seized under the power of this ordinance it has not been announced. However, the Police Department, under direction of the Mayor, made a survey of the coal situation throughout the city and secured gifts of $17,000 and 1000 tons of coal, which was distributed among the needy.

During the year many plans were suggested for overcoming conditions that existed in the city last winter. One scheme was to store coal in the Central Park reservoir, but this and many other ideas were never put into use.

Early in the year, in order to prevent extortionate prices being exacted, the County Fuel Administrator, Reeve B. Schley, established maximum prices for the peddlers, of which there are about 10,000 in New York City. At about the same time State Fuel Administrator Wiggin recommended the pooling of anthracite and a reduction of sizes. The latter had been advocated for several years. The first named recommendation was adopted by some of the shippers, but it did not continue.

DUMPINGS OF ANTHRACITE AND BITUMINOUS AT TIDEWATER PIERS IN 1918

	Anthracite	Bituminous		Anthracite	Bituminous
January	24,064	19,277	August	32,417	30,157
February	22,876	17,268	September	28,119	30,328
March	31,224	23,810	October	27,190	28,503
April	28,548	23,084	November	21,834	25,479
May	29,835	28,104	December	26,261	25,169
June	30,695	30,240			
July	32,228	31,155	Total	335,291	312,574

The local situation was not relieved until higher temperatures prevailed, and then the coal began to move easier. Meantime the Fuel Administration has been assisted in handling the situation by a committee of retail dealers.

Almost simultaneously with the warning issued by the Fuel Administration that consumers should place orders for winter fuel early, Dr. Garfield announced a reduction of 30c. per ton in the price of coal at the mines, which of course meant a similar reduction at tidewater. In a comparatively short time the retail dealers had received orders from nearly all of their customers, although there was no prospect that the coal could be delivered before fall or the early winter. Then followed the increase in freight rates, and a cut of 25c. per ton in the gross margins allowed the retail dealers, which in addition to the decrease in price announced by Dr. Garfield meant a reduction of 55c. by the retailers.

As a result of the heavy call for anthracite from all parts of the country, and the belief of the officials that New York, because of its nearness to the coal fields, could be supplied with fuel later in the season than could other sections of the country, shipments to this market did not come forward as rapidly as the trade desired.

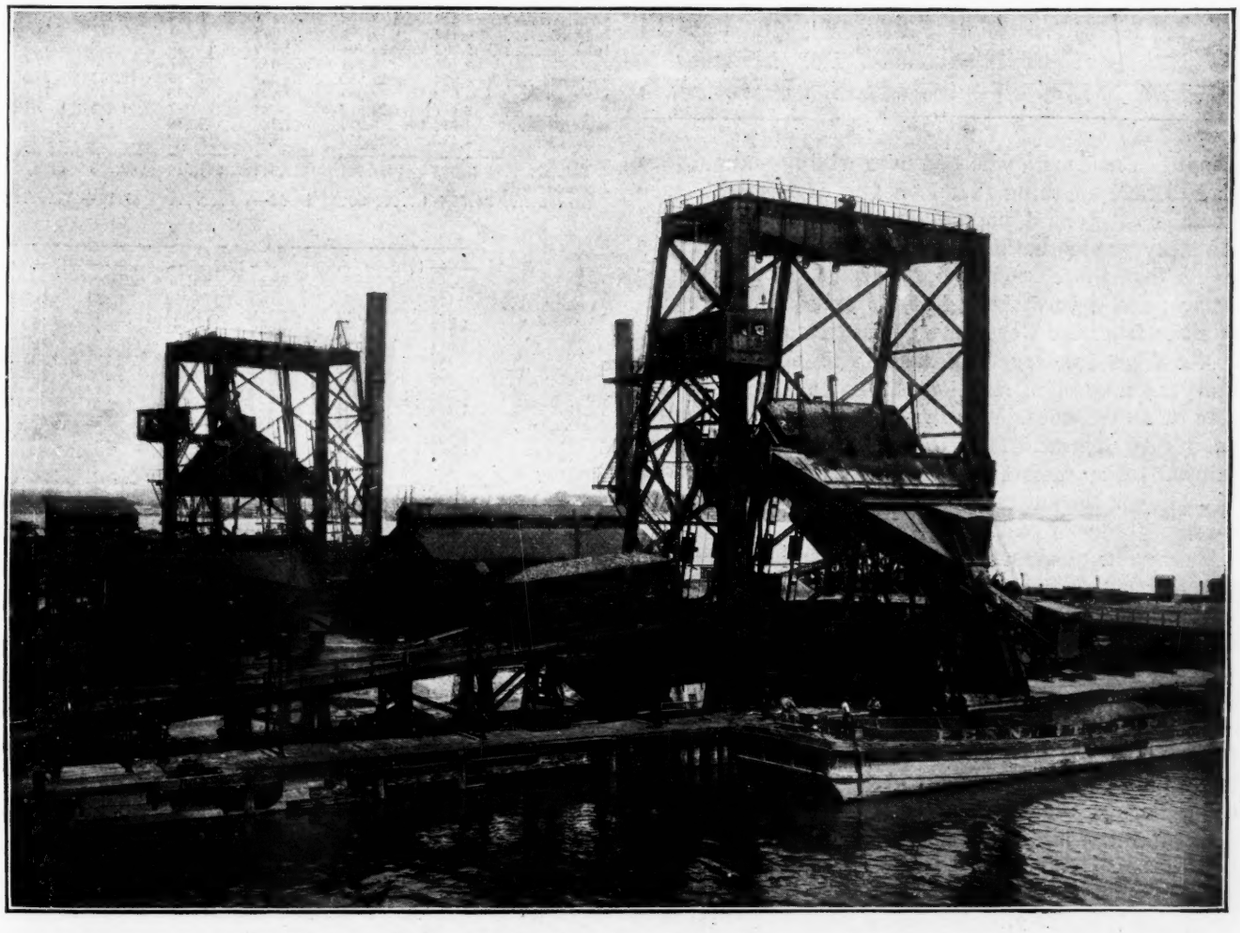
After much time had been spent by various officials, dealers and others in explaining to the public that coal was being handled here as rapidly as received, the Labor League held a meeting in the City Hall and adopted resolutions insisting that the dealers store more coal, but not suggesting where the coal could be obtained.

The allotment of anthracite for New York State was announced by the Anthracite Committee as 15,855,300 tons, an increase of 11.89 per cent. over the 1916-1917 tonnage, of which about one-half came to New York City.

Early in the summer the city officials announced that they had closed negotiations by which this city was to receive 300,000 tons of anthracite coal, which would be sold to the poor. This coal was to be obtained from culm banks in Schuylkill County, Pennsylvania, but so far none of the coal has arrived.

Demand continued strong until late in November, when as the weather kept mild and consumers had no occasion to keep their furnace fires going at top speed, there was a lull, and dealers began to receive notices from their customers to cancel their orders. Even while this was going on Mayor Hylan ordered the Police Department to make another survey of the coal situation, and notwithstanding a strenuous protest from Dr. Garfield it was made, resulting in a report to the Mayor showing a deficiency of 3,577,261 tons in the city's supply.

In December business became inactive. There were plenty of most of the sizes to go around, but no surplus. Retailers who were buying considerable "independent" product cancelled their orders, relying entirely on "company" coal, which was purchasable at a price 75c. per



PENNSYLVANIA RAILROAD CAR DUMPING MACHINE AT SOUTH AMBOY

ton below what they would have to pay for the former product.

The situation with regard to the anthracite steam sizes is one of much concern and will likely remain so for some time to come. Since early summer these coals have been a burden to the market and toward the end of the year shippers had some difficulty in reducing their stocks. However, one benefit derived from the scarcity of the domestic sizes during the year and the educational campaign conducted by the Fuel Administration forces was the using of buckwheat No. 1 in household furnaces. Considerable of this size has been used in this city, and while it has already meant a considerable saving to householders, it will continue to do so for some time to come, and probably forever.

The bituminous market had many ups and downs during 1918. Instead of the scarcity of free coals available for the spot buyers and poor car supply that prevailed in January, 1918, the first month of the new year saw an overabundance of free coals here and a good car supply. Early in the fall, and just before the armistice was signed, consumers began to hesitate about adding to their holdings; and demand, which had been heavy throughout the previous months of the year, began to dwindle away. This was followed by an almost cessation of business when the fighting "over there" actually

BITUMINOUS SHIPMENTS TO NEW ENGLAND DURING 1918

	1917	1918		1917	1918
January	152,449	129,267	August	199,591	371,554
February	129,299	124,013	September	203,339	390,183
March	163,818	231,549	October	213,500	398,054
April	198,512	273,515	November	201,109	.....
May	228,091	336,072	December	124,735	.....
June	217,168	325,710			
July	190.328	356.314	Totals	2,221,939	2,836,231

stopped. Consumers who had been willing and only too glad to take anything that looked as if it might make steam, now stopped buying altogether and announced that they wanted nothing but the best grades, with the result that there soon was a surplus of the cheaper grades; and toward the end of the year there were concessions from the Government's maximum prices.

Not from January until well on toward the end of the year was there sufficient bituminous coal to take care of all demands. War requirements were of course taken care of first. This, together with what could be shipped to consumers who required the better classes of coal, took the entire output of the good as well as the cheaper grades of coal.

Bunkering of vessels took a considerable portion of the shipments to this harbor, and this was carried on on a larger scale than ever before. At one time it was estimated there were about 200 vessels here, most of which were waiting for coal, either for bunker purposes or for cargoes.

The threat to close theaters and moving picture houses in order to conserve fuel met with strenuous opposition from the owners, who contended that each day's closing meant a loss of $11,800 in taxes to the Government, while the value of the coal saved would be less than $163.

One result of the scarcity of coal was the extra demands made on the gas companies. The companies were doing the biggest business in their history for several weeks, so much interest being taken by the public that the newspapers published the number of cubic feet of gas manufactured and furnished to the public by the companies.

Although the miners were doing their utmost to keep the country supplied with fuel, additional emphasis was put on the need for increased production and better preparation by an allowance of 20c. per ton for clean coal. This tended to help matters some.

In June exporters and shippers who sent coal from Hampton Roads and other southern ports to points along the New England coast, and also to South America, were compelled to suspend shipments for a few days owing to the presence of enemy U-boats off the coast. Several loaded coal vessels were sunk nearby.

TONNAGE AND VALUE OF ANTHRACITE AND BITUMINOUS COAL AND COKE EXPORTED FROM THE PORT OF NEW YORK IN 1916, 1917 AND 1918

Anthracite Coal

	1916 Tons	1916 Value	1917 Tons	1917 Value	1918 Tons	1918 Value
January	8,921	$48,477	7,934	$65,068	490	$4,223
February	8,740	43,573	4,981	35,362	1,184	8,177
March	8,231	46,325	13,720	105,657	2,607	20,050
April	19,257	100,023	8,339	53,106	7,107	49,785
May	17,809	94,613	16,714	133,327	4,444	30,158
June	20,949	114,510	14,693	106,173	6,761	43,991
July	19,489	106,756	15,967	108,986	9,340	62,824
August	40,671	223,842	3,942	29,317	10,460	72,264
September	6,800	37,396	26,988	205,470	13,602	96,204
October	36,235	208,630	3,288	21,956	11,656	80,688
November	7,751	61,545	10,856	75,502	.....	.....
December	9,474	62,298	6,831	47,254	.....	.....
Totals	204,327	$1,046,988	134,252	$987,178	68,651	$468,364
Average cost per ton	$5.12+	.....	$7.34+	.....	$6.82+	.....

Bituminous Coal

	1916 Tons	1916 Value	1917 Tons	1917 Value	1918 Tons	1918 Value
January	893	$3,408	2,049	$9,246	530	$3,435
February	1,245	5,167	1,731	6,976	2,157	19,348
March	2,193	9,684	3,224	19,649	4,508	27,190
April	2,229	9,142	171	1,774	3,081	21,304
May	4,419	15,296	995	7,147	8,117	58,118
June	5,108	21,404	1,939	14,466	6,807	30,751
July	4,387	15,731	448	2,767	7,440	52,402
August	6,025	21,508	967	7,786	10,149	72,612
September	1,012	3,387	593	3,354	3,449	25,444
October	8,427	31,617	43	487	1,045	7,884
November	1,934	9,279	1,229	9,830	.....	.....
December	4,430	25,358	959	8,049	.....	.....
Totals	42,202	$170,881	14,348	$91,534	47,283	$338,488
Average cost per ton	$4.05+	.....	$6.42+	.....	$7.18+	.....

Coke

	1916 Tons	1916 Value	1917 Tons	1917 Value	1918 Tons	1918 Value
January	136	$1,097	1,660	$10,902	1,599	$19,582
February	817	5,617	1,211	11,383	44	1,253
March	2,177	12,433	505	6,273	956	14,481
April	1,677	15,874	1,325	18,107	633	16,757
May	1,331	10,086	1,900	38,063	2,153	30,868
June	966	8,914	3,650	49,646	1,605	20,562
July	1,897	14,095	3,434	33,238	117	3,220
August	1,195	9,639	1,763	26,359	333	9,032
September	2,447	17,742	2,901	40,736	106	3,294
October	2,521	18,748	1,539	20,512	203	3,996
November	1,957	14,657	304	7,709	.....	.....
December	535	9,317	1,716	20,777	.....	.....
Total	17,656	$138,219	21,908	$283,735	7,749	$123,045
Average cost per ton	$7.82+	.....	$12.95+	.....	$15.87+	.....

There were many changes made during the year in the pools and more changes are contemplated this year. A reduction of 10c. per ton in the margin granted jobbers for coal physically handled by them caused much discussion among the trade, but all gladly accepted the ruling. An early order had granted the jobbers a margin of 35c. per ton, but State Fuel Administrator Cooke soon after taking office reduced this to 25 cents.

The order issued in November allowing traction and lighting companies to accumulate 100,000 tons of coal relieved the local situation slightly by disposing of some

coal that would eventually have found its way to the tidewater docks for public sale.

The number of cars of bituminous coal dumped at South Amboy, Port Reading, St. George, Elizabeth and Port Liberty, which are under the jurisdiction of the Tidewater Coal Exchange, during 1918, totaled 250,120.

The Harsimus Cove, Communipaw and Weehawken piers are not under jurisdiction of the exchange.

Coal Production in the United States in 1918

The following table has been compiled largely from data communicated by the various state mine inspectors, estimates having been made only where no such statistics were available, but in all cases upon the basis of reliable information. Where these figures differ from those given in the text of the reviews, the discrepancy is due to late telegraphic reports necessitating changes in the totals.

PRODUCTION OF COAL IN THE UNITED STATES

States	1917 Quantity Short Tons *		1918 Quantity Short Tons
Alabama	20,068,000		20,000,000
Arkansas	2,144,000	(a)	2,373,000
Colorado	12,483,000		12,713,000
Gerrgia	119,000		101,000
Illinois	86,199,000		89,325,962
Indiana	26,540,000	(b)	28,795,682
Iowa	8,965,000	(c)	8,250,000
Kansas	7,185,000		7,292,000
Kentucky	27,808,000		29,690,000
Maryland	4,746,000		4,759,000
Michigan	1,375,000	(c)	1,501,053
Missouri	5,671,000		6,000,000
Montana	4,227,000		4,700,000
New Mexico	4,000,000		3,990,676
North Dakota	790,000		900,000
Ohio	40,749,000		48,500,000
Oklahoma	4,387,000		4,489,064
Pennsylvania	172,448,000		180,000,000
Tennessee	6,194,000		6,916,000
Texas	2,356,000		2,800,000
Utah	4,125,000		5,302,070
Virginia	10,087,000		10,100,000
Washington	4,010,000		4,200,000
West Virginia	86,442,000		97,900,000
Wyoming	8,576,000		9,417,269
Alaska, California, Idaho, Oregon, South Dakota	97,000		122,000
Total bituminous	551,791,000		590,137,776
Pennsylvania anthracite	99,335,000		99,514,334
Grand total	651,126,000		689,652,110

*United States Geological Survey figures. (a) For fiscal year ending June 30. (b) Fiscal year ending Sept. 30. (c) Fiscal year ending Nov. 30. (e) Estimated.

The following table gives the total production of byproduct coke by states in 1918:

PRODUCTION OF BYPRODUCT COKE IN THE UNITED STATES*

State	1917 Production, Net Tons	1917 Per Cent. Total	1918 Production Estimated, Net Tons	1918 Per Cent. Total	Increase Tons	Increase Per Cent.
Alabama	2,740,761	12.2	2,676,000	10.2	—64,000	—2.4
Illinois	2,289,833	10.2	2,278,000	8.6	—12,000	—0.6
Indiana	3,540,718	15.8	3,870,000	14.7	329,000	9.3
Kentucky	531,539	2.4	522,000	2.0	—10,000	—1.8
Maryland	518,810	2.3	477,000	1.9	—42,000	—8.1
Massachusetts	595,113	2.7	542,000	2.0	—53,000	—8.9
Minnesota	490,272	2.2	742,000	3.0	252,000	51.4
New York	993,184	4.4	1,086,000	4.1	93,000	9.3
Ohio	3,546,476	15.8	5,283,000	20.1	1,737,000	49.0
Pennsylvania	4,095,605	18.2	4,691,000	17.9	595,000	14.5
Tennessee	35,246	0.2	121,000	0.4	86,000	243.7
Washington	26,346	0.1	30,000	0.1	4,000	14.9
West Virginia	511,033	2.3	612,000	2.3	100,000	19.7
Colorado, Michigan, Missouri, New Jersey, Wisconsin	2,524,344	11.2	3,334,000	12.7	810,000	32.1
Total	22,439,280	100.0	26,264,000	100.0	3,825,000	17.0

*Figures compiled by U. S. Geological Survey.
(—) Signifies decrease.

Petroleum Production and Exhaustion

BY L. P. BRECKENRIDGE
Sheffield Scientific School, Yale University

The accompanying charts show some interesting figures on petroleum production and exhaustion. Fig. 1 shows how the production of the United States has compared with world production from 1880 to 1917. It will be noticed that since 1905 this country has produced between 60 and 70 per cent. of the crude petroleum of the world.

Fig. 2 shows the estimated degree of exhaustion of the known fields in this country. It will be observed that five fields—the Kansas-Oklahoma, North Texas, Gulf Coast, Wyoming-Montana and California—are less

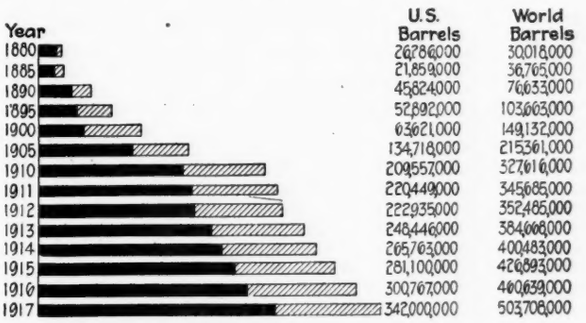


FIG. 1. PRODUCTION OF PETROLEUM IN THE UNITED STATES COMPARED TO REST OF WORLD'S OUTPUT

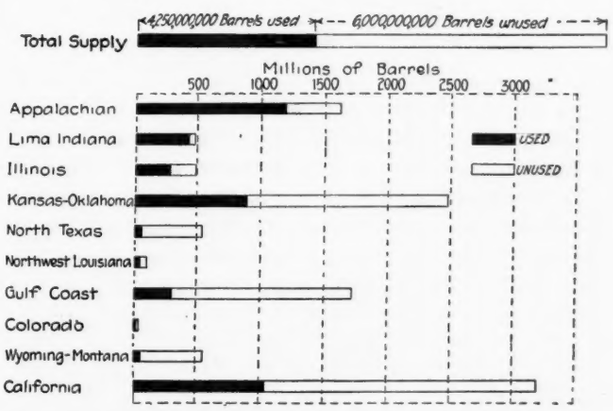


FIG. 2. ESTIMATED DEGREE OF EXHAUSTION OF UNITED STATES OIL FIELDS

than half exhausted. Some of the others, particularly the Lima-Indiana and the Colorado regions, are rapidly nearing complete exhaustion.

Such charts as these, while they must necessarily be more or less uncertain since they are at best merely estimates, serve as indications of what the future will certainly bring forth. Much of our modern industrial life as well as our pleasure depends upon the internal combustion engine that now uses petroleum or some of its derivatives as fuel. It would appear that the day is not far distant when this country must either import oil from other lands, must adopt a new fuel, must manufacture the present fuel from sources other than petroleum, or must seek means of motive power other than the gasoline engine.

Philadelphia Coal Trade in 1918

By CORRESPONDENT
Philadelphia, Penn.

THE year 1918 was truly historic in local coal annals, the outstanding feature being the fact that the business was practically taken over by the Government, both production and distribution, more particularly the latter. As time passes this phase of the situation will become more apparent as being a time when the distributors of coal worked directly under Governmental supervision. Yet today it is difficult to find a man connected with the trade who will be willing to say that it was not for the best; and even the consumer, when hard pressed, will admit that were it not for this supervision he would more than likely have been compelled to pay $25 or more a ton for coal during the zero days of January, 1918.

At that time the yards of the city were bare of coal, with the most severe weather the city had ever experienced. Despite urgings all the previous summer, most consumers had failed to take advantage of the opportunity to store coal. It was during this period that in some sections of the city the situation became so acute that people robbed the cars on the street before they could be delivered to the dealers' yards. Thousands of tons were taken in this way, the loss falling on the railroad companies, who later in the year reimbursed the dealers. The severe weather broke up in February and gradually moderated right on into spring.

Fuel Authorities Planned for Future

In the meantime the fuel authorities, profiting by their experience of the winter, had already laid plans for the following season. It was decided that all coal deliveries would be supervised by the County Fuel Administrator. He devised a system of card ordering, whereon each consumer was required to state the amount of coal used during the past season, together with details as to size and construction of his home, the kind of heating apparatus and the estimated amount of coal needed. These cards were checked through a central bureau, the expense of which was defrayed by a stamp tax of 2c. per ton.

With the approach of Apr. 1, it was for a time thought that the usual spring reduction of 50c. a ton, reducing 10c. each month until the circular price was reached in September, would be abandoned. However, the Fuel Administration decided upon a flat reduction of 30c. a ton from the circular price, the full rate being reached on Sept. 1, which would actually result at that time in the winter circular being 20c. higher than the previous winter.

A spirited and widespread campaign was started to urge consumers to store coal in the summer, and this was readily responded to by the public. As a matter of fact the orders piled up much faster than the dealers could handle them, and in the meantime the shipments during the summer fell off so much that the dealers for weeks at a time had their equipment idle for lack of coal. It was explained by the distribution committee that they were endeavoring to fill up outside markets, such as New England and the Northwest, and that this city would be taken care of in the fall.

All summer long the dealers clamored for more fuel, but it was not forthcoming. The administration also ruled that no consumer could receive more than two-thirds of his entire order prior to Jan. 1. Even though the dealers did not receive all the coal they could handle, it is a fact that more coal was stored in the cellars than ever before. With the coming of fall the weather continued quite moderate, and even right through December to the first of the new year the weather was such that the demand for coal fell off very considerably.

This condition was reflected later in the year by a lack of demand for egg and pea coal. The consumers became quite insistent upon receiving the sizes ordered, which at this time were principally stove and nut. The situation became so serious that the Fuel Administration endeavored to convert the public to the use of a mixture of egg and pea, using a series of advertisements in the newspapers for this purpose, but with little success in reducing the accumulation.

Profitable Year for the Dealers

Reviewing the year it must be said that it has been a most profitable one for the dealers, despite what they considered handicaps. It is true that individual effort was curtailed to a great extent, so that no dealer could go after trade, but was really confined to the business that he had been accustomed to in previous years. However, with the fuel authorities putting the business on practically a cash basis, all credit losses were stopped automatically. Also the fact that the administration fixed a gross margin of $2.50 on Apr. 1 made it exactly clear to the public that the dealers were not profiteering at their expense. The retailers are at this time in strong financial position, although there has been a feeling that due to the rapidly increasing costs toward the latter end of the year they were entitled to a greater gross margin than $2.50, especially in view of the fact that the wholesale price of coal was increased $1.05 on Nov. 1 by the national administration in order to meet the miners' demands for an increased wage scale. No part of this increase accrued to the dealers, although their capital investment was greatly increased thereby.

As to the future the retailers are much concerned to learn whether they can keep their business on the same firm financial basis. Even at this time, with the relaxing of war effort and the reduction of working forces in munition plants, there is an increasing demand for credit by the consumers, and many dealers are actually putting more money out in this way during the first few weeks of the new year than they did in the entire year of 1918. This matter is also giving the producing companies considerable concern, as they are extremely anxious to keep their accounts with the dealers closely paid up.

There can be no doubt when the Fuel Administration relaxes control some time between now and Apr. 1 there

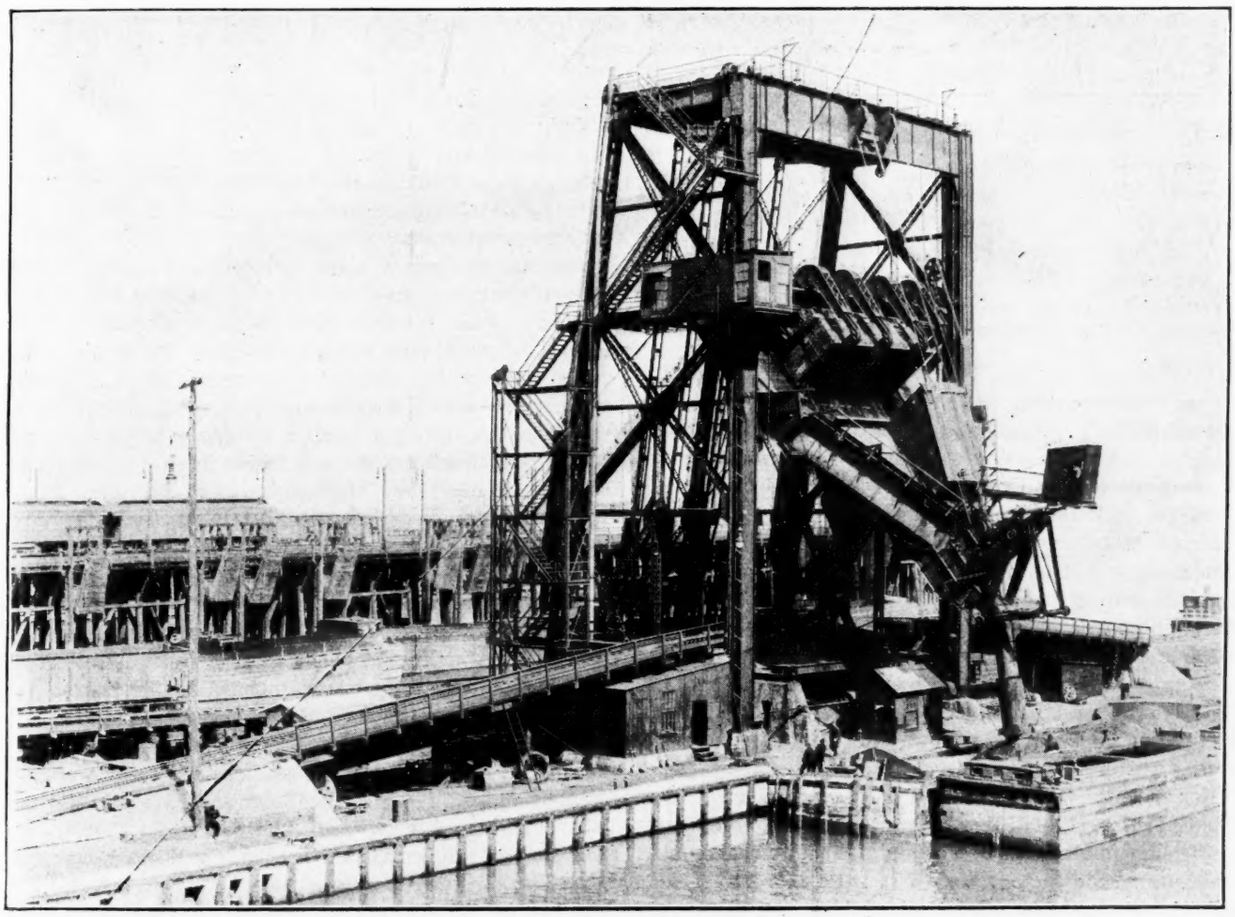
will be many changes in the trade. There is a general feeling that with the individual prices so much higher than the company prices there will be violent price shadings, particularly since the moderate weather up to the first of 1919 has made the production somewhat difficult to market. It is also thought that after Apr. 1 the operators will be in for some rather dull times, as there is not the least doubt that the consumers will be loath to lay in the same quantity of coal that they did during the previous summer, when our war effort was at its height.

In the steam trade there has also been remarkable changes. Early in the year the mines and washeries were far from able to meet the demand for fuel. In the effort to meet the fuel needs of the country thousands of tons of culm, which had lain in the banks at the mines for years, was shipped all over the country and mixed with bituminous coal, as high as $1.50 a ton being paid for it at one time. This extreme demand for steam coal broke early in the summer and there was a gradual tapering off, until when November was reached all sizes but buckwheat were actually a drug on the market. The larger companies were compelled to store rice and barley in their storage plants, while culm went completely out of the market. Even with the coming of the new year conditions in steam coal did not improve, and at this time the disposal of these sizes is becoming a serious question, with much talk of price lowering in order to move the coal.

One thing is certain, and that is the market has absorbed more anthracite steam sizes in the past year than it will again take for many a day, and it is altogether likely that numerous washery operations built by the big companies during the war will close down completely on this account. However, the matter of price is bothering the producers more than anything, and there are grave doubts whether in the face of increasing bituminous production they will be able to maintain during the coming year anything like the scale the smaller anthracite coals have enjoyed during the past twelve months.

The local market probably took more bituminous coal to fill its requirements than it did in any previous year. Earlier in the year, during the heatless days, it was necessary for the fuel administration to commandeer coal in order to meet the pressing industrial needs. While there was at the first much complaint made at the fixed price insisted upon by the Government, later events proved that this was really a saving feature for the bituminous trade.

As more open weather came on the production of bituminous naturally increased, together with a more efficient car supply, until early in the fall more coal was reaching here than the market could absorb. All the big industrial plants were piled high with reserve stocks, and when the war ended there was a sudden canceling of many orders for fuel, as the consumers were momentarily expecting a price reduction. All



PENNSYLVANIA RAILROAD CAR-DUMPING MACHINE AT GREENWICH POINT, PHILADELPHIA

the while, however, the high-grade coals were in strong demand, and the call was so heavy that no thought of price recession was entertained; but with the cheaper grades there was much price cutting, quietly of course, and at times some of these shippers had difficulty in getting $2.60 for their output, especially in the closing days of 1918.

At this time the soft coal men are hoping that the Fuel Administration will continue to supervise the trade until April, and at that time there seems to be no doubt that the coal business will once more be returned to the producers. On account of the many new openings in the region there can not be the least doubt that prices will fall much below the present Government schedule, and the shippers are at this time looking forward to that time with much anxiety. As a matter of fact many in the trade are strongly in favor of the Government keeping control of the bituminous situation, at least to the extent of maintaining prices so that the business can be conducted at a living profit.

Anthracite in New England in 1918

By G. G. WOLKINS
Boston, Mass.

SYNOPSIS—*Steady demand. Record tonnage by rail but receipts by water slumped materially. Grave situation in January and February. Costs mount high. Regulation carried too far and later into the season than necessary. "Emergency" coal in the fall puts trade to great inconvenience. More hopeful prospect for retailers. Heavy tonnage of steam sizes.*

A LARGELY increased tonnage, sharp advances in cost, and a sustained demand for domestic sizes were the leading features of anthracite in this territory in 1918. A long hard winter wiped out the reserves, whether in dealers' bins or in the cellars of householders. Distribution was made only through channels authorized by the Fuel Administration, and every shipment, every delivery by team, was assumed to be carefully scrutinized. Notwithstanding all the efforts to conserve and most drastic regulations designed to cover its use, more coal was passed around during the twelve months just ended than in any year in history.

For most of the year distribution was "spotty," but this condition righted itself toward the close when shipments came more easily. Throughout the twelve months the usual trade factors were but little more than cogs in a machine. The judgment of houses long in the business was seldom taken into account after deliveries were diagrammed on the basis of the year that began Apr. 1, 1916. In New England this worked hardship to many communities where forehanded dealers had taken pains early that year to get coal forward in anticipation of labor troubles in the spring. When increases in tonnage were granted and allotments left to state administrators, there was so much uninformed figuring that a good many towns would have been in a hard way but for the mild season and the indications in December that the fuel authorities would soon relinquish control.

In general, there was more anxiety over supply in those communities where there were dealers with weak connections. The larger companies had shipped full quotas by Dec. 1, but most of the "independent" shippers were in arrears. The Anthracite Committee seemed not to have the same effective control of the latter, and this came out very prominently during the summer and early fall. Difficulties arose from the tonnage placed during the basic year by chains of middlemen, all of whose dovetailing transactions were not easy to trace.

Another feature was the reduced tonnage by water. The further commandeering of tugs for the Navy, higher marine freights, and the difficulty of putting boats and coal together at the New York piers, all contributed to the increased movement all-rail. There are retail dealers always equipped to discharge boats whose entire receipts during 1918 were by rail, and at no time during 1918 was there such congestion as to make it necessary to place an embargo against coal for points far to the eastward.

During the record low temperatures in January practically the only supply of domestic sizes for ten days was in special trains from the mines. One trainload was diverted from Camp Devens to meet pressing emergencies in Boston. The famine was so acute that temporary fuel stations were opened in the poorer districts. Wealthy citizens had coal taken from the cellars of their country houses and hauled over the road for use in the city. Meanwhile receipts by water were extremely discouraging. The Delaware River froze tight and dumping at New York slowed up, so that it was increasingly difficult to run the gantlet of watchful New York retailers. Both the big city markets were after coal strong, and it was not until after the weather moderated that barges again came forward in any number. Cargoes were ill-assorted; stove and chestnut were very scarce, and retail prices were advanced in Boston from $9.85 to $10.25. Not only were several retailers there without a ton of domestic sizes, but there were several towns and some cities where householders were forced to use bituminous at about the same range of price.

Even in March there were retailers usually in favorable position who were without anything like a continuous supply. The movement improved very gradually. Loading was better, although normally it would have been considered very poor. There was renewed anxiety about tugs. One company alone had 24 barges at one time waiting in the Delaware, and but three tugs en route. In another month it looked impossible for both rail and water movement to speed up enough to give

New England the increased percentages promised, in addition to the 1916 basis. The Eastern dealers, in particular, were alarmed over the outlook.

"Spring prices" were announced in Washington early in April, and when to these were added 50c. increase in freight tolls from mines to tidewater June 25, 35c. on Sept. 1, and $1.05 effective Nov. 1, it was realized that anthracite was getting to be a very expensive fuel.

The year developed an even wider variation in marine freights in company-owned barges. The rate on anthracite in Reading barges from Philadelphia to Boston was advanced from $1.25 to $1.50 on Jan. 28, and again 30c. on June 25, being operated by the Railroad Administration. On Dec. 28 a further advance of 30c. applied on all cargoes delivered east of Newburyport, Mass. The present rate to Portland is therefore $2.10 as compared with the 75c. rate that prevailed less than two years ago. At the same time the rate on barges owned by the Lehigh & Wilkes-Barre Coal Co. was $1 (plus docking) until May 11, when an advance of 50c. applied, since unchanged. The Lehigh Valley R.R. barges held to a level rate of $1.30 to Boston from Perth Amboy until Dec. 28, when it was scaled up by the Railroad Administration to be on a parity with the Reading.

Settled weather during June helped toward better movement of tows. Rail receipts were also improved. Output was reported on a 90 per cent. basis, although stocks in retail yards were 25 per cent. less in Boston than in 1917. Under instructions of the Anthracite Committee points farthest east and up the rivers were favored in shipments the first of the season, although later on it was evident that the movement of barges was so slow that no special gain was made.

At the end of May it was announced by the Fuel Administration that 1,250,000 net tons monthly of domestic sizes would be furnished New England, distribution to continue on the 1916 basis. This was a decided marking up of quota, but it was several weeks before the trade felt the result of restricting domestic sizes from the Middle West and from the South Atlantic states. When in July a tow of barges was fired on by a U-boat, shippers were instructed to increase all-rail deliveries to points ordinarily served by water. Receipts by the latter route sagged notably.

Retailers were further disturbed over the strict way in which fuel committees ruled that apartment houses having over a certain boiler equipment should be obliged to use bituminous. The effort at Washington to shut off domestic sizes from industrial plants was loyally supported by state administrators here. It took a good deal of enlightening argument in many cases to get "exemptions" and "permits" in favor of manufacturers who were in every sense retail dealers in anthracite for their own communities, but gradually most of the cases were straightened out. The regulating spirit died hard, however, and at the end of December, a time when many shippers were soliciting orders, the Fuel Administration was keeping a tight grip on domestic sizes that shippers wanted to send to factories, etc., for the use of employees, as they had done from time out of memory.

A mild sensation was caused during July by the long telegrams sent from Washington by the statistics division to "retail dealers" who were alleged to have neglected making reports. The number of delinquents, however, was entirely misleading. The names of 1200 "dealers" must have been based upon cumulative lists of consignments of from one car up for several years. The names had not been checked by anyone conversant with New England trade, and besides the many who had consistently made reports there were scores who had gone out of business eight and ten years before.

To a surprising extent the owners of box barges showed throughout the year a disinclination to charter for Boston. Rates supervised by the Shipping Board allowed $2.50 to Boston anchorage at the same time that $2.15 was the rate to New Bedford. The lack of towing service through Cape Cod Canal was a factor in making outside barges scarce for Boston.

On July 18 Boston retail prices were advanced 75c., to $11 for broken, egg, stove and chestnut to cover increased freight charges, and 40c. instead of 25c. began to be charged for basketing. There was the usual agitation in Boston and other cities over iniquity in the coal business and in favor of municipal yards, etc. A mere advance of 25 per cent. by the Government management of railroads meant nothing to city fathers, who showed surprise and resentment over any advance in retail prices.

APPROXIMATE COST OF READING COAL ALONGSIDE BOSTON DURING 1918

White Ash	Jan. 30	May 1	July 1	Sept. 15	Nov. 15
Broken	$7.86	$7.84	$8.66	$8.96	$10.01
Egg	7.76	7.44	8.26	8.56	9.61
Stove	8.01	7.69	8.51	8.81	9.86
Chestnut	8.11	7.79	8.61	8.91	9.96
Pea	6.51	6.19	6.96	7.26	8.31

Through the latter part of the year the whole question of distributing the increased quota was much tangled. There seemed no settled policy and awkward questions were not answered. Retailers inland were generally better supplied than in 1917, but at tidewater ports there was much confusion over the grouping of figures. Distribution had never been absolutely restricted to town lines, and where so much was built upon 1916 deliveries there should have been better comprehension of local conditions.

In August, ostensibly to reduce the towing distance, Reading barges began to load at Port Reading, N. J., instead of at Port Richmond, Philadelphia. Later this was the rule, only barges from the Port Richmond repair yard clearing from Philadelphia. The order to do this issued from the Railroad Administration at Washington, but in the judgment of those longer familiar with such problems the result was a loss, not a gain. Reduced tug mileage was not the whole story. The general lack of facilities at Port Reading. the fact that barges of that size can only pass through Hell Gate on a daylight tide, and the storing of cars in a most congested area, are only some of the reasons that readily occur. The records show that it has taken as long to reach Cape Cod from New York as from Philadelphia, and one would suppose the experiment would soon be brought to an end. The repairs occasioned by barges bumping into each other at Port Reading should alone be reason enough for abandoning the innovation. The whole Reading organization is geared to handle these barges from Port Richmond.

A distinct falling-off in receipts early in the fall led to special requisitions of egg, stove and chestnut to

be distributed by the New England Fuel Administration from the New England gateways. The original provision was for 50 cars daily; but when this mark was not reached the order was increased to 100 cars per day to make up arrears. The "independents" had been making no better shipments, and because of this the companies were struggling not only to meet their own obligations but to ship the extra tonnage piled on them by the Anthracite Committee, usually to make up the deficiencies of "independents."

The "free coal" for New England was to be more equitably distributed than was assumed possible through trade channels. The program was for each retail dealer applying for coal to send his check in advance to the New England Fuel Administration and bind himself to accept whatever size was sent him, regardless of preference. In other words, it was "anthracite," no distinction being made as to size or grade or price. A lot of dissatisfaction followed, naturally, and gradually the order was reduced, chiefly through the inability of the fuel authorities to dispose of it. At the end of the year it was dropped to five cars daily. While "free coal," egg, stove, and chestnut was being worked off in this manner, state fuel administrators frequently soliciting consignments, the regular coal factors were placing the surplus broken and pea that the New England Fuel Administration did not want. The bulk of the "free coal" was furnished by shippers of whom less complaint could be made, and it was granted to make up the arrears of shippers who were justly complained of.

Shippers with established connections had a favorable year, on the whole. A heavy tonnage of buckwheats helped make up deficits in the tonnage of domestic sizes. Retail dealers, on the other hand, passed through an extremely trying period. Too much in the way of regulation was attempted and a too finely graduated measuring stick was used too often and for too long a time. But out of it all have come benefits. Dealers know more about accounting; and so does the public about costs! It has been shown what happens when an outside impartial authority steps into the coal business to regulate it. And credits are better.

Anthracite figures for 1918 are misleading, unless they show clearly the large tonnage of junior sizes shipped into New England, especially during the summer, to help make up the shortage in bituminous. At times the movement of buckwheat, rice, barley, and culm reached 35 per cent. of the anthracite total. Beginning in the summer there was more discrimination between grades than last winter, when so much "fireproof" was poured into this market, and by October the movement had sagged to less than 16 per cent. Considering that the use of these coals was new to most steam plants, and that it was difficult to get improved stokers suited to the purpose, New England, from a conservation standpoint, shows a good record in this respect.

At the present time the rate on general merchandise shipments to England from New York is $2.50 per cubic foot of ship space, or $100 a ton, against a high record rate during the war period of $6 per cubic foot, or $250 a ton. The pre-war rate on this class of business was 25 cents per cubic foot, or about $10 a ton.

Pittsburgh District in 1918

By B. E. V. Luty
Pittsburgh, Penn.

The Pittsburgh coal district had a history quite its own in 1918, the war placing special responsibilities upon it. In the first place, the district normally serves a large part of the iron and steel industry, not only as to the production of iron and steel, but also as to its fabrication into various finished products, and nearly all the large machine shops of the district were converted into munition factories. In the second place, the burden of the lake coal movement to the northwest fell unusually heavily upon the Pittsburgh district, because of the heavy demands of the Navy for the smokeless coals of West Virginia and Kentucky. In midsummer the Pittsburgh district was suddenly called upon to "help out" in the matter of lake shipments and furnish a much larger tonnage than had originally been set down as the district's quota.

River Traffic Makes a Spurt

The Monongahela River coal traffic, which had been rather a decadent affair for years, as the outcrops on the river had been worked back as far as was feasible, took on new life in 1918 and materially helped to curtail the scarcity of coal, means being found to bring coal by rail short distances to the river. From a tonnage standpoint, however, the most important development along this line is that by which many mines in the Connellsville region, hitherto serving their beehive ovens, have had their facilities rearranged so that they can ship Connellsville coal by water to byproduct coke ovens in the Pittsburgh district, particularly the 640-oven plant of the Carnegie Steel Co. at Clairton. The Jones & Laughlin Steel Co. ships large quantities of coal from its mines on the Monongahela River to its beehive ovens at Woodlawn, on the Ohio River, and many mills along the rivers receive gas and steam coal by water.

Labor conditions in the Pittsburgh district in 1918 were on the whole relatively satisfactory. Almost all through the year there was a shortage of labor, but it was due more to depleted forces than to slackness on the part of the men remaining on the payrolls.

Traffic conditions in the first two months of 1918 were indescribably bad, coal production being greatly interfered with by "car shortage," which of course did not mean that there were not enough cars, but that they did not make their round trips fast enough. If there had been fewer cars in service it is possible the daily supply at mines would not have been less. In the spring the cars began to move better, and some cars belonging to the region, blocked all winter in the east, returned to their usual occupation.

The general policy of the Fuel Administration, that coal consumers should stock up during the summer, could not be carried out with respect to the Pittsburgh district, because the coal could not be spared. On account of the heavy demand for lake coal, particularly toward the close of the season, the local coal distributor was required to shut off coal to consumers caught stocking it, and at times consumers were encouraged to draw upon stocks previously accumulated. Toward the close of the lake season a shortage in domestic coal developed, and the lake market seemed to be in fair way to be

well supplied, so that a slight diversion of coal from the lake trade to the domestic trade was permitted.

The year opened with Government prices for the district at $2.20 for slack, $2.45 for mine-run and $2.70 for screened. In the spring, when the arrangement was made that railroads should pay the full prices, the Government limits were reduced 10c. This was better for the operators than for the higher prices to obtain on most trade, with the railroads paying the much lower prices the Railroad Administration had had in mind.

With the signing of the armistice Nov. 11 and the general slowing down in industrial operations, Pittsburgh district coal did not become nearly as plentiful as was the case with coal in many other districts, particularly Ohio, Indiana and Illinois. This was due chiefly, no doubt, to the fact that very little Pittsburgh district coal had been stocked, but operators in the district were disposed to contend also that their coal is better and that when consumers were again given a choice they were disposed to take Pittsburgh coal. Another factor was the demand for gas coal, which hardly let down at all, and a large portion of the district's output is of that variety. The result of all this was that even in the closing weeks of the year some gas coal consumers were willing to pay dealers the Government brokerage allowed, in addition to the set price, while there was very little steam coal sold at less than the set price, concessions as a rule being merely in the form of producers allowing a margin to dealers, so that they could sell to consumers at the regular Government limit.

That coal prices will recede somewhat seems very probable to leading coal operators in the district, but the operators contend that there will be less decline in the district than in the majority of the districts, and that if lake demand proves fairly good in 1919 the district's output will be absorbed fairly well.

Prosperity Insured if Capital and Labor Co-operate

BY JOHN H. JONES
President Bertha Coal Co., Pittsburgh, Penn.

Our country is facing the greatest era of permanent prosperity known, providing the people coöperate to bring about such a condition. Capital should give intensive thought to the problem and render to labor the highest returns possible in payment for labor performed. Labor in turn should coöperate with capital, permitting capital to receive fair returns on its investment, keeping in mind the constant and steady employment of labor and capital.

Through such coöperation we will be kept constantly busy; growing and moving crops to feed other countries as well as ourselves. This will require coal, steel and other products mined and manufactured. Labor will be employed steadily on a large scale, and the resultant prosperity of the country will be in direct proportion.

The time necessary to bring about this condition will depend upon the teamwork of employees and employer. Leaders of labor should advise their following carefully and not intimidate capital by trying to impose unfair conditions. Capital must study conditions carefully and pay the highest wages possible, consistent with good business, and in all cases, keep in mind the cost of living, as labor is worthy of its hire and should receive its share.

During the present adjustment period coal will be plentiful, but within a few months when industries are operating to their full capacity it will require every effort on the part of the miners and operators to supply the demand.

More coal will be required in 1919 than in any year in the history of the world. The railroads alone will use 200,000,000 tons. Potteries, glass, cement and so-called non-essential industries will require much more coal than during any year of their existence.

We, as American citizens, must urge our statesmen to pass such legislation as is necessary to have employers agree on a selling price for their product under the supervision of the Government, so that they will be able to pay labor the highest wages possible and at tht same time receive a fair return on their investment. By so doing we will stabilize business, preventing either a destructive minimum, or a prohibitive maximum. If such condition is not brought about, we will have two extremes in selling prices in the year 1919.

Coöperation will sustain confidence; confidence will stabilize business; and business stabilized will bring prosperity and happiness.

Output of South African Coal Mines in 1917 Shows Increase Over 1916

The annual report of the Government mining engineer of the Union of South Africa for the calendar year ended Dec. 31, 1917, gives the following tabulation of coal mined for the years 1916 and 1917:

Province	Coal Mined Short Tons	Coal Sold Quantity Short Tons	Coal Sold Value	Coal Sold Per Ton
Transvaal	6,936,418	6,641,229	$7,724,121.94	$1.16
Cape	11,510	8,300	28,976.50	3.49
Orange Free State	897,654	843,095	1,058,212.04	1.25
Natal	3,103,604	2,890,296	7,140,900.48	2.47
Total in 1917	10,949,186	10,382,920	$15,952,210.96	
Total in 1916	12,281,796	10,007,502	13,342,168.55	

The variation in the price is due to competition rather than to the great difference in the quality of the coal. The following table gives information about the number of coal-mining machines in use in the Union of South Africa for 1916 and 1917:

	NUMBER OF MACHINES			
Province	Electrical	Compressed Air	Total	Percentage of Work Done to Total Tonnage Mined by Collieries Using Coal Mining Machines
Transvaal	6	382	388	31.47
Cape	..	..	..	..
Orange Free State	..	15	15	34.93
Natal	22	162	184	56.78
Union of South Africa, 1917	28	559	587	71.21
Union of South Africa, 1916	20	517	537	75.82

In 1917 there was a decrease in the percentage of coal mined by machines compared with that similarly produced in 1916; this was due to the fact that the total tonnage mined by such collieries increased in 1917 by some 11 per cent. over the previous year. The total number of employees in the coal mines of all the provinces of South Africa in 1917 was 1463 whites and 30,025 (55 female) colored workers.

Detroit Coal Market in 1918

BY E. E. DUNBAR
Detroit, Mich.

WITH many of its residents experiencing hardship and suffering because they were unable to obtain coal, Detroit welcomed the coming of 1918 with reservations. In the twelve months that have intervened, more than in any previous year in the history of the city, public interest has centered about the coal trade and problems of coal supply. For consumers and dealers, the greater part of the year has been a period of anxiety, uncertainty and strain, with the confusion at times seemingly heightened rather than alleviated by mandates and regulations put out by the Federal and state fuel administrations.

Detroit's visible supply of anthracite when the year opened was virtually limited to the cargo of the lake freighters "B. F. Berry" and "R. J. Reiss." Ice conditions had prevented delivery of the coal at the upper lake port that was their destination. Shortage in supply was aggravated by a condition of railroad congestion that permitted delivery of only a few cars daily of either anthracite or bituminous. One consignment of twelve cars was two weeks en route from Chauncey, Ohio, to Monroe, Michigan.

So serious was the situation that early in the year it was reported 3500 homes in Detroit and its environs were without fuel supply or had only sufficient fuel for one or two days. Heatless street cars were an incidental feature. The coal supply was so low that even the operation of cars became uncertain, while for a time the companies supplying the city with electric light, power and gas were daily facing the probability they would have to suspend operations within a few hours.

GAS AND ELECTRIC PLANTS KEPT RUNNING

Fortunately for the people of the city, whose inability to get coal was adding to the burden of the gas and electric companies, these utilities were kept in operation, the efforts of the coal trade and fuel administration procuring small supplies of coal to keep the plants running from day to day.

The hardships of the public and the difficulties of the dealers and transportation men were increased by a long stretch of near zero weather in January, the temperature one day dropping to 16 below, a degree of cold practically unprecedented in Detroit.

In the endeavor to make the small supply of coal at hand go as far as possible the Detroit police department undertook supervision of distribution to domestic consumers, receiving applications, making small allotments and communicating the orders to such of the dealers as had coal. It was reported early in the month that the yards of 19 retailers had closed, their owners being unable to get coal and unwilling to meet the frantic appeals from customers.

Attempting to curtail consumption, reductions were made in the city's street lighting and the routes and manner of operating the street cars were altered. Edgar B. Whitcomb, then chairman of the Wayne County fuel committee, announced that priority should be given domestic consumers, with public utilities also taking precedence over factory requirements. His appreciation of the coöperation of local dealers during the crisis was demonstrated in his making public an "honor list" showing 129 dealers had filled 46,685 applications, while five dealers had served more than 2000.

With the purpose of bringing about equitable distribution of coal coming into the city, and with the approval of Mr. Whitcomb, the Detroit coal pool was organized by a number of dealers and opened for business Jan. 11, with Edward J. Parks, an experienced traffic man, as manager. Operating in conjunction with similar organizations in other cities, the pool was continued until about the middle of February. A freer movement of coal had then developed and the pool was dissolved. Its operation brought criticism from some of the retailers that their shipments were held back by being put through the pool. Some of the steam-coal buyers complained also that the coal sent to them was of less desirable grade than the stock shipped under their contracts with the mines.

ENFORCES A NINE-HOUR WORKDAY

On Jan. 15, 1917, W. K. Prudden, Michigan's fuel administrator, issued an order making nine hours the maximum business day for practically all mercantile places, office buildings and most other business establishments. This was followed by the Federal Fuel Administration's order for five days shutdown, which threw about 200,000 Detroit workers into idleness.

Because of their having exhausted coal on hand and their inability to renew their supplies, thirty Detroit factories were reported on Jan. 24 to have discontinued operation, while others, including some of the largest in the city, were said to be facing the necessity for similar action.

Considerable friction between Detroit and the state fuel administrator developed about that time, due to reports that Mr. Prudden was diverting to other parts of the state coal that was consigned to Detroit. The dealers also were complaining of the unprecedentedly heavy losses incurred from coal cars being raided by thieves on tracks in the city. One dealer reported receiving a car containing 300 lb. that was billed to him at 38 tons.

The local situation had improved little in early February. Some of the local industrial plants working on war supplies were reported closed, and on Feb. 5 it was announced 54 retail yards were closed because their owners were without coal. On Feb. 6, the public schools of Detroit were closed. They did not reopen until Feb. 18.

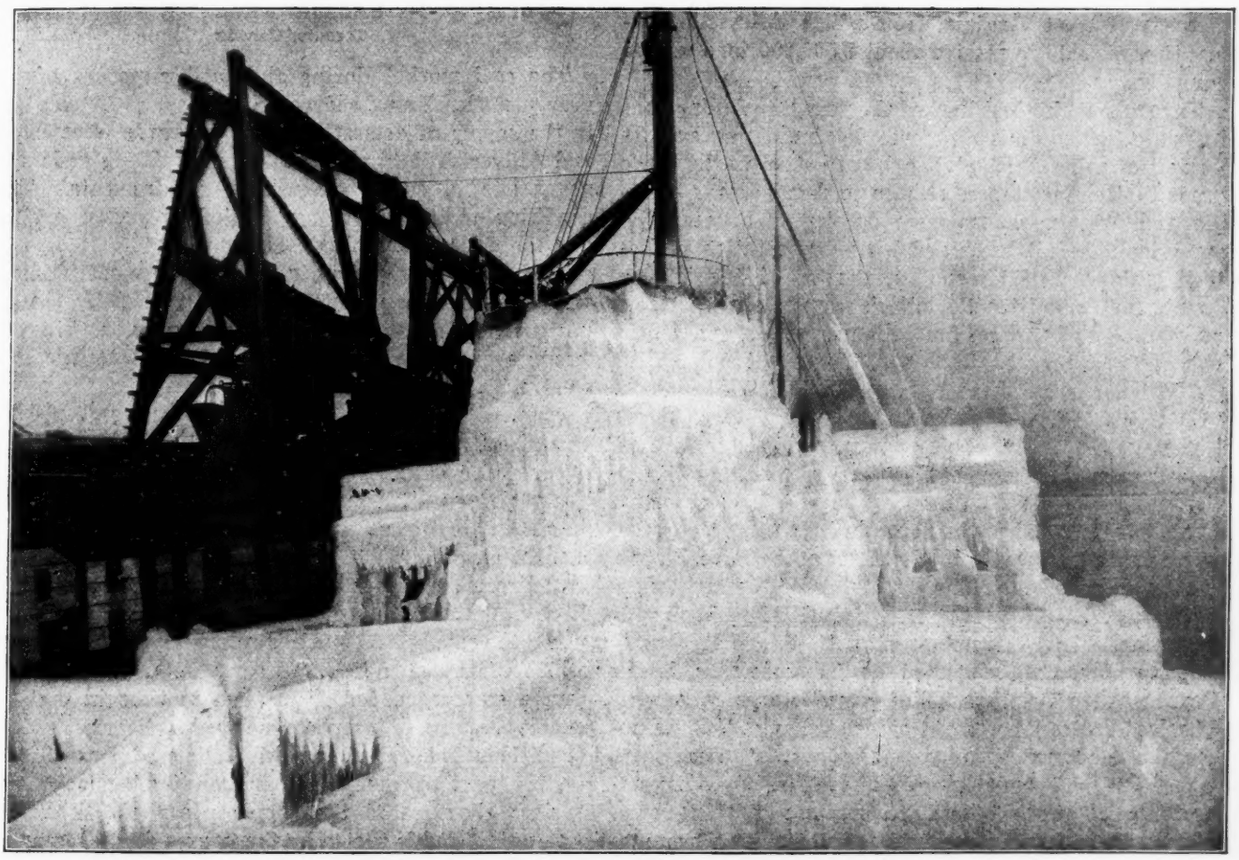
Events during the early weeks of the year apparently were shaping toward elimination of the jobbers as factors in the coal trade. Cognizance of this situation was taken in a meeting of the manufacturers and jobbers with the state fuel administrator in Detroit in March, when a number of prominent manufacturers expressed the sentiment that jobbers are a necessary adjunct, performing efficient and valuable service for their cus-

tomers. Protest also was voiced against the zone system, which the Federal Fuel Administration was reported to be outlining and which the Detroiters feared would cut off their supply of coal from West Virginia and Ohio, substituting the product of Indiana mines. W. B. Horne, an agent of the Federal Administration, while in Detroit about that time, announced Detroit consumers would receive no smokeless coal and might get little or no anthracite. As practically 95 per cent. of the domestic trade depends on anthracite, the announcement occasioned much gloom.

Another controversy between Detroit dealers and the state fuel administrator developed in May, when Mr. Prudden announced the gross margins permissible to dealers supplying domestic trade. Mr. Prudden made the population of various towns the basis for determining the margin for dealers in those towns. His first announcement gave Detroit dealers a margin of $2.25, which was later raised to $2.50, but still fell short of the amount the dealers sought.

Dealers contended they could not do business on a margin of $2.50. The Detroit Board of Commerce intervened in the matter, with the desire to effect an arrangement which would speed the movement of coal to Detroit. After an extensive investigation of dealers' costs, the Board of Commerce recommended that Mr. Prudden fix the margin at $2.50 a ton on anthracite and $3 a ton on bituminous. Though he was understood to have approved the investigation, Mr. Prudden apparently disregarded the recommendation, retaining $2.50 as the margin on anthracite and disposing of the allowance on bituminous by fixing maximum prices for delivery of high and low grade coal of that type.

In July the Board of Commerce again undertook to accelerate shipments of anthracite by appointing a special representative to be stationed in Washington. As neither the state nor the Federal Fuel Administration accorded recognition to this agent, his work was soon terminated. The Board of Commerce, however, continued its interest and on Aug. 14 sent a delegation of prominent business men and manufacturers to Washington. The delegation was accorded hearings before representatives of the Fuel Administration, the War Industries Board, Secretary of War and other branches of the Government, without, however, being able to obtain any increase in the city's allotment of anthracite. The allotment of 601,000 tons was a reduction from the amount actually shipped into the city in 1917-18, when coke and smokeless coal also were used extensively as substitutes, while the 1918 allotment to the state represented a reduction of 24.42 per cent.



LAST COAL BOAT OF THE SEASON AT ONE OF THE LAKE DOCKS

Though unable to obtain a larger allowance, the Board of Commerce committee was promised steps would be taken at once to immediately expedite shipments under the city's allotment and to increase the supply of a good quality of bituminous coal. This assurance was followed by modification of the zone regulations permitting shipment of Kentucky, West Virginia and Ohio coal into lower Michigan for the use only of domestic consumers, gas or byproduct plants and railroads. The priority regulations covering shipment of coal from these districts for the lake trade served as a check on

shipments of domestic lump and prepared sizes to Detroit and the most immediate outcome of the order was the cutting off from Detroit steam-coal users of the coals most favored in their operations. To offset this loss, shipments from certain districts of Indiana and Illinois were increased. Fearing they would be able to get no other supply, the consumers of steam coal and many of the retailers accepted the advice of the fuel administration and stocked up heavily with the Illinois and Indiana coal. Both classes of buyers are reported to be having much trouble disposing of this stock.

Prior to the modification of zone regulations described in the foregoing, the Federal Fuel Administration had aroused vigorous protest in Detroit by cutting off shipments to Michigan from the Kanawha and Coal River districts of West Virginia, from which Detroit in normal times is said to receive about 2,500,000 tons of coal annually.

Throughout the first half of the year, the feeling that the state fuel administrator was discriminating against Detroit or at least not giving the attention to the city's needs that circumstances seemed to demand, was growing and differences also were developing between the state fuel administrator and his representative in Detroit, Edgar B. Whitcomb, chairman of the Wayne County fuel committee, the latter's support of the Detroit retailers in their appeal for a higher margin apparently widening the breach.

Mr. Prudden on June 7 requested Mr. Whitcomb to resign. The latter took no immediate action. Detroit coal men, the Board of Commerce, common council of the city and various other local organizations rallied to the defense of Mr. Whitcomb. Their efforts to bring about the dismissal of the state fuel administrator were unsuccessful, as was also the attempt to have Wayne County detached from the remainder of the state as a separate fuel administration district with Mr. Whitcomb in charge. Mr. Whitcomb finally retired, and Mr. Prudden, on June 13, appointed as his successor James Couzens, then Detroit's police commissioner, who with Charles A. Dean had been associated with Mr. Whitcomb on the Wayne County fuel committee. After some opposition had been expressed to Mr. Couzens' acceptance of the appointment, matters quieted down. Mr. Couzens, having received the Republican nomination for mayor, retired from the committee in September. As Mr. Prudden had decided to move his headquarters from Lansing to Detroit, and actually did so Oct. 7, no successor was named for Mr. Couzens. His resignation was said to have been influenced by a desire to give undivided attention to the campaign which resulted in his election for mayor of Detroit.

In the effort to obtain definite information on Detroit's anthracite needs the state fuel administration set apart the first ten days of September for receiving applications from domestic consumers dependent on hard coal base-burners. Some 23,000 applications were listed. With those previously submitted to dealers the total is estimated at 53,000. The allowance of anthracite, originally fixed at six tons each, was subsequently reduced to a maximum of four tons.

The closing weeks of the year were featured by an inactive market for either steam or domestic bituminous, due to the large stocks held by many of the steam plants and retail dealers. In the case of the dealers distribution was impeded by the fact that mild weather continued practically without a break to the end of the year, and also by the fact that much of the coal in dealers' yards is better suited for factory use than for household heating plants.

Many of the dealers are apparently confident that removal of zone restrictions and retirement of the various fuel administrations will make possible a smoother and more satisfactory operation of their business during the coming year than was experienced in 1918.

Toronto Coal Trade in 1918

By Phillips Thompson
Toronto, Canada

The coal market during the earlier months of the year just closed was characterized by a great shortage in the supply of domestic fuel. The yards were empty and deliveries light, and dealers only filling orders in small lots to supply immediate requirements. This condition of affairs was aggravated by severe weather and the difficulty of obtaining help.

With the opening of spring dealers were overwhelmed with orders from consumers, who, warned by the experience of the previous season, were anxious to lay in supplies early, as they were urged to do by the Fuel Controller. The usual practice has been for the larger consumers to give their orders and arrange for deliveries from time to time as required, but last year nearly every householder requested immediate delivery of his year's supply. The consequence was that dealers were in receipt of orders which would keep them busy for months ahead.

Deliveries were made direct from the cars and very little coal stored in the yards. The difficulty of distributing the supply was much increased by labor shortage, which continued until late in the fall. The taking of orders was suspended from time to time in order to enable dealers to overtake delayed deliveries. These conditions induced a general feeling of apprehension on the part of the public and an impression that a serious shortage in the supply prevailed. That this was unfounded is shown by the figures furnished by the Fuel Controller giving the total shipments of domestic anthracite received in Toronto for the year ending Nov. 30, at 417,156 gross tons, as compared with 428,000 gross tons for the previous year.

The receipts of bituminous during 1918 considerably exceeded those of 1917. The total consignments to the port of Toronto from April to the end of November were 1,001,709 net tons, as compared with 867,836 net tons during the corresponding period of 1917; but these figures cover the supplies for an area within a radius of about 60 miles round Toronto. Owing to the greatly increased demand for industrial consumption, there was at times a pronounced scarcity of soft coal, but toward the close of the year the market was overstocked with it and prices fell somewhat below the rate fixed by the government.

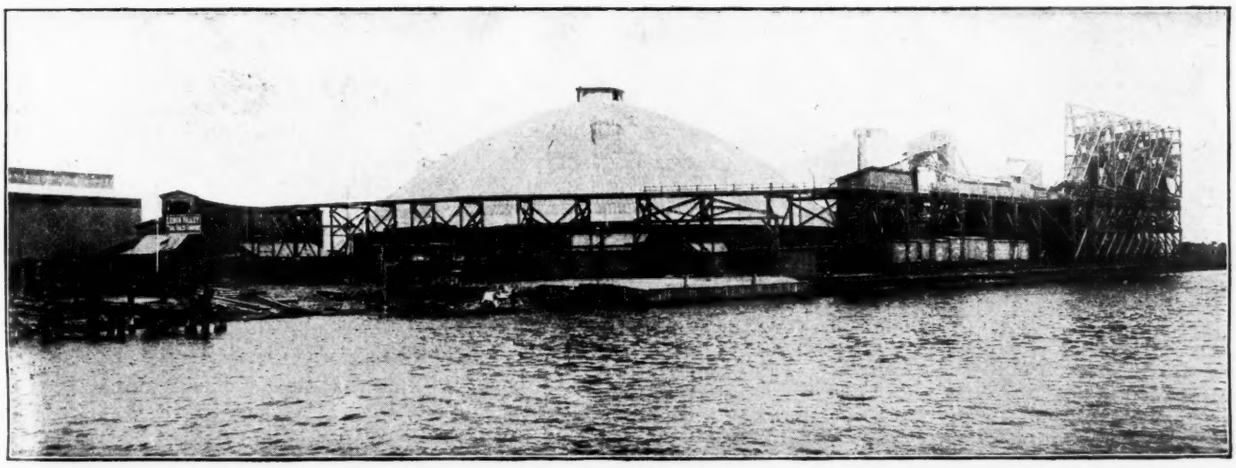
The general feeling in the trade as to the prospects for business during the new year is decidedly optimistic. The domestic trade is rapidly getting back to normal conditions. All danger of a serious shortage during

the remaining winter months is believed to have been averted by the limitations imposed by the Fuel Controller. Owing to the fact that so large a proportion of consumers have their winter's supply stored in the cellars, the domestic trade is likely to be lighter than usual for some weeks. As soon as the season opens an increased volume of business as compared with the last few years may be expected, as with the return of the soldiers from overseas many new homes will have to be provided for.

The demand for industrial coal which is at present quiet, is dependent upon the reconstruction of industries upon a peace basis, and while the future cannot be forecast with any degree of certainty, there seems every likelihood that the present year will witness great activity in the staple lines of manufacturing. A large number of the workingmen displaced by the closing down of the munition plants in Toronto have already been absorbed by shipbuilding, agricultural implement, tractor and other industries. Many new enterprises are projected in view of the opportunities presented by the export trade, and though the process of getting down to a peace footing is necessarily somewhat retarded by present high cost of material and labor, in view of which some contemplated undertakings are being temporarily delayed, it is regarded as assured that the heavy domestic and foreign demand for the staples of production will insure a busy and profitable season for the manufacturer, and a resumption of activities means a strong demand for fuel.

Buffalo Coal Market in 1918

By JOHN W. CHAMBERLAIN
Buffalo, N. Y.



LEHIGH COAL SALES CO. DOCK AT SUPERIOR, WISCONSIN—NOW BEING REBUILT

AS BUFFALO is a jobbing bituminous market it was hit hard by the conditions in 1918. Only here and there did a jobber do anything like an active business, while not a few of them confess that they did not make a living. The reason for this is plain. Unless there is a surplus of coal most operators sell their output direct to consumers. The jobbers knew this well, and though they complained, they clung closely to the office routine and waited till the old conditions should return. Only one or two suspended entirely. James A. White did practically no business and finally closed his office and went away. Harry F. Butler kept the office of the Century Coal and Coke Co. open, but did no business there. The company could sell coal in Montreal, and it did so. Both of these offices expect to reopen this year.

Never did the bituminous trade change front with the rapidity it assumed last November. While the experts were still crying that coal was to be scarcer than ever before, it began to become plentiful and almost in a day it overflowed; first in Canada, keeping the Buffalo jobbers in hot water paying demurrage, and then in general, with most of the members of the local trade still with their feet on the desk, waiting for the producer who would sell to them. From all sides salesmen reported that the consuming yards were piled full, and yet the jobbers had sold but little of this coal and had made next to nothing out of it. Before the end of the year there were salesmen here, offering coal from territory not before tributary to this market.

The future of this trade is a problem, for nobody knows what can be done with the increase of bituminous capacity created by the war demand, and said to be at least 25 per cent. more than it was. Will home industry and export take care of it all? The Buffalo jobber does not see how this can be done. While everyone is hopeful, and is prepared to make the fight for all he is worth to regain his suspended tonnage, it is no exaggeration to say that if this new capacity cannot be shut off somehow, the bituminous trade will go back to the control of the consumer, where it was before the fall of 1916. This means selling on a 10c. margin and producing at about cost.

Buffalo is not a jobbing center only. A big tonnage passes through this city that is not even sold here. There is a good producing tonnage here also. About

an even dozen companies, with offices in Buffalo, last year turned out 2,631,867 gross tons of bituminous coal and there is good prospect of more this year. Capitalists spent good money last year, looking for mines that they did not find, and they will resume the quest when the trade settles down a little.

Buffalo ships about four-fifths of the anthracite in the lake trade, sending it all to ports on Lakes Michigan and Superior. Some is still shipped from Erie, Penn., but the ports of Lake Ontario have dropped the upper lake trade for the present. The amount of anthracite shipped from Buffalo by lake in 1918 (customhouse figures) was 3,594,803 net tons, as against 4,237,904 tons in 1917. The operations were on an allotment prepared and enforced by the general anthracite committee, which maintained W. C. Blodgett, an old anthracite man, to look after it. As the season neared its close it was found that the shipments were behind the allotment, but an extra effort was made and the amount was moved.

This rush of anthracite to the lakes late in the season kept the city supply very short and complaints were many, though no actual distress was reported, thanks largely to the activity of the local fuel administration office. Late in the year even the anthracite demand became easier. December beheld the fuel administrator's office announcing that the supply would be normal by Jan. 10. The fuel office had now nothing to do! The sudden change of front in anthracite was largely due to the warm season. The year went out with the thermometer up to 50 deg. Only about 20 days had shown freezing temperature, the lowest being 19 deg. But for a bad shortage of natural gas, the situation would now be of the best.

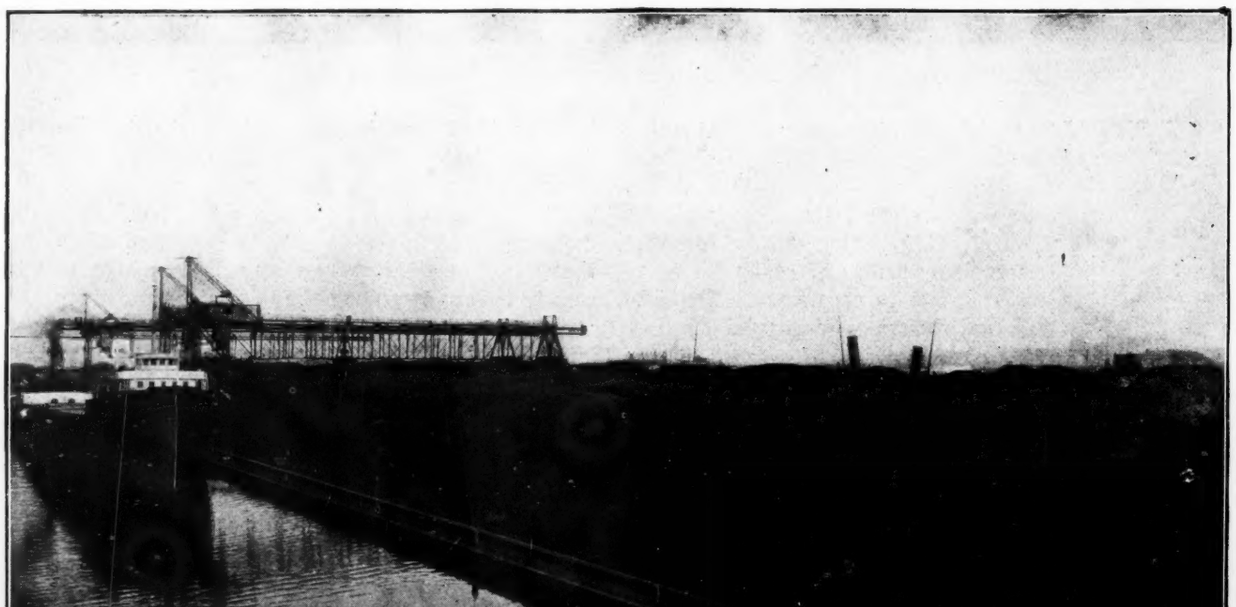
Milwaukee Coal Trade in 1918

By HERMAN BLEYER
Milwaukee, Wisconsin

THE story of Milwaukee's coal market in 1918 is devoid of anything of unusual interest. Dealers agree that it has been satisfactory in every way, but much will depend upon weather conditions during the remainder of the season. The winter thus far has been mild and with little snow. With prices fixed for both wholesaler and retailer by the Fuel Administration, and with restrictions as to delivery, the coal business of the year thus far has lacked every element of marketing and lapsed into a routine of simply keeping things moving.

The closing months of last winter were unusually bitter, and storms retarded deliveries for weeks. With the tribulations of that period in mind, coal handlers entered the new season on Apr. 1 with a determination to get in all the coal they could as soon as possible and to hasten the output to consumers in every possible way. The westward movement by lake began alarmingly slow, but by persistent effort on the part of dockmen the flow was accelerated to such an extent that when navigation on the Great Lakes closed the docks in Milwaukee harbor held full supplies of bituminous coal and all the hard coal that had been allotted to the district by the administration.

Summer deliveries were made on an unusually large scale both to manufacturers and householders, the



UNLOADING A BIG STEAMER—TYPICAL SCENE IN THE MILWAUKEE COAL DISTRICT

SHIPMENTS OF COAL BY RAIL OUT OF MILWAUKEE DURING 1918

	Hard	Soft
January	12,727	97,801
February	16,458	80,521
March	12,313	76,676
April	1,978	38,052
May	899	33,841
June	5,686	52,604
July	17,830	95,745
August	17,470	99,733
September	15,098	101,280
October	15,074	168,239
November	13,695	116,260
December	35,307	93,060
Total	164,535	1,053,812
Total, 1917	200,465	772,770

former, in many instances, accumulating large stock piles in the vicinity of their plants. The signing of the armistice between the warring nations was followed by an almost complete cessation of orders from the larger consumers, however, and business has been dull ever since.

Prices of all grades of coal ruled high during 1918, but consumers accepted the situation gracefully, and were seemingly satisfied if they got the supplies they needed. Federal regulation has proved popular. Small dealers say the Government has treated them very fairly, and in so doing has helped the big fellows to a better profit. There is no complaint on this score. Regulation has stabilized business and taught some valuable lessons as to cost of doing business. It has also brought dealers together and wiped out little burdens accumulated during years of keen competition. Opinion is unanimous that regulation should be continued at least until the end of the coal year in spring, as stocks have been purchased on the basis of schedule prices, and the entire business directed in accord with Administration rulings. Were regulation to be suddenly withdrawn, there would in all probability be a slump, which would be disastrous to those with large stocks bought at war prices.

Everybody in the coal trade at Milwaukee predicts a prosperous new year and are facing the future with a feeling of optimism. They base this judgment on the ground that every industry will be taxed to its utmost to supply things needed to make up for the wanton destruction during the war, and that factories will demand maximum supplies of fuel. It is expected that the policy inaugurated by the Government of stimulating the production of Illinois coal will make producers in that section livelier competitors in the Milwaukee field in future, as many who had never used western bituminous before have become wedded to it. Whether this will be so when Government restrictions are removed is problematical.

Ohio Coal Trade in 1918

By J. W. Lehman
Columbus, Ohio

The year 1918 was a most peculiar one in the coal trade in Ohio territory. It differed from any preceding year in the fact that the change from a strong market to a rather weak demand, which took place during the closing weeks of the year, was probably the most rapid transition in the history of the trade. Of course, the usual events brought out by the world war were something without precedent, and consequently the striking effects of the signing of the armistice were without precedent.

The year, with the exception of the final five or six weeks, was one of the most prosperous in the memory of coal men in Ohio. This is especially true of the producing end of the business, which was running at high speed throughout the year and which reports an output far in excess of that in any previous year.

An analysis of the market conditions which prevailed during the year reads similar to many other lines of business, with the exception that the decline was probably more rapid than that experienced in other lines of endeavor. The year opened with an exceptionally strong demand, not only for steam, but also for domestic grades. This continued pretty much throughout the year, and every one was at top speed, so to speak, until the end came suddenly.

With the opening of 1918, domestic demand probably monopolized the attention of producers, distributors and retailers alike. The railroads were tied up and retailers were clamoring for fuel with which to make deliveries to customers. There was a marked shortage, which was partially relieved by the fuelless days designated by Fuel Administrator Garfield. This condition lasted for the greater part of the winter season and was only relieved by warmer weather.

Due to the efforts of the state and county fuel administrations, suffering among householders was held at a minimum and there were no actual cases of extended suffering.

The steam business during this period was in pretty much the same condition. Steam grades were scarce, and users vied with each other to get deliveries. It was a scramble to get fuel sufficient to operate plants and also to keep the public utilities going. In fact some of the public utilities were put on short fuel rations, in order to help the war program along.

With the coming of warmer weather, which relieved

RECEIPTS OF ANTHRACITE AND BITUMINOUS COAL AT MILWAUKEE BY LAKE, RAIL AND CARFERRY DURING 1918

Month	By Cargo		By Carferry		By Rail		Grand Total	
	Hard	Soft	Hard	Soft	Hard	Soft	Hard	Soft
January	.....	.....	4,631	5,734	113	69,446	4,744	75,180
February	.....	.....	907	3,237	20	62,727	927	65,964
March	.....	.....	7,417	32,406	46	73,524	7,463	105,930
April	.....	.....	8,801	45,368	.....	63,586	8,801	108,954
May	85,700	389,547	12,630	9,747	.....	53,851	98,330	453,145
June	53,947	434,094	20,467	6,251	128	56,981	74,542	497,326
July	106,037	554,711	3,972	3,675	326	55,658	110,335	614,044
August	119,293	768,060	3,955	464	120	65,803	123,368	834,327
September	96,451	621,265	4,429	1,082	60	52,731	100,940	675,078
October	98,541	383,452	11,116	10,855	73	53,153	109,730	447,460
November	115,879	251,754	4,238	2,068	259	53,651	120,376	307,473
December	126,417	29,500	9,891	8,341	100	66,495	136,408	104,336
Total	802,265	3,432,383	92,454	129,228	1,245	727,606	895,964	4,289,217
Total, 1917	922,538	3,025,558	64,047	174,144	2,521	984,992	989,106	4,184,694

the domestic situation, there was more fuel for steam users, and little trouble was experienced from that time on. But frequent warnings of the Federal and state fuel administrations caused steam users to continue buying in order to accumulate a surplus stock for the coming winter.

At the same time domestic users were urged to lay in their winter's supply of fuel early, and that helped to maintain the strong demand. When the fall season arrived, a much larger proportion of winter coal had been stocked by householders than ever before. Steam users had thousands upon thousands of tons of coal laid by to guard against emergencies.

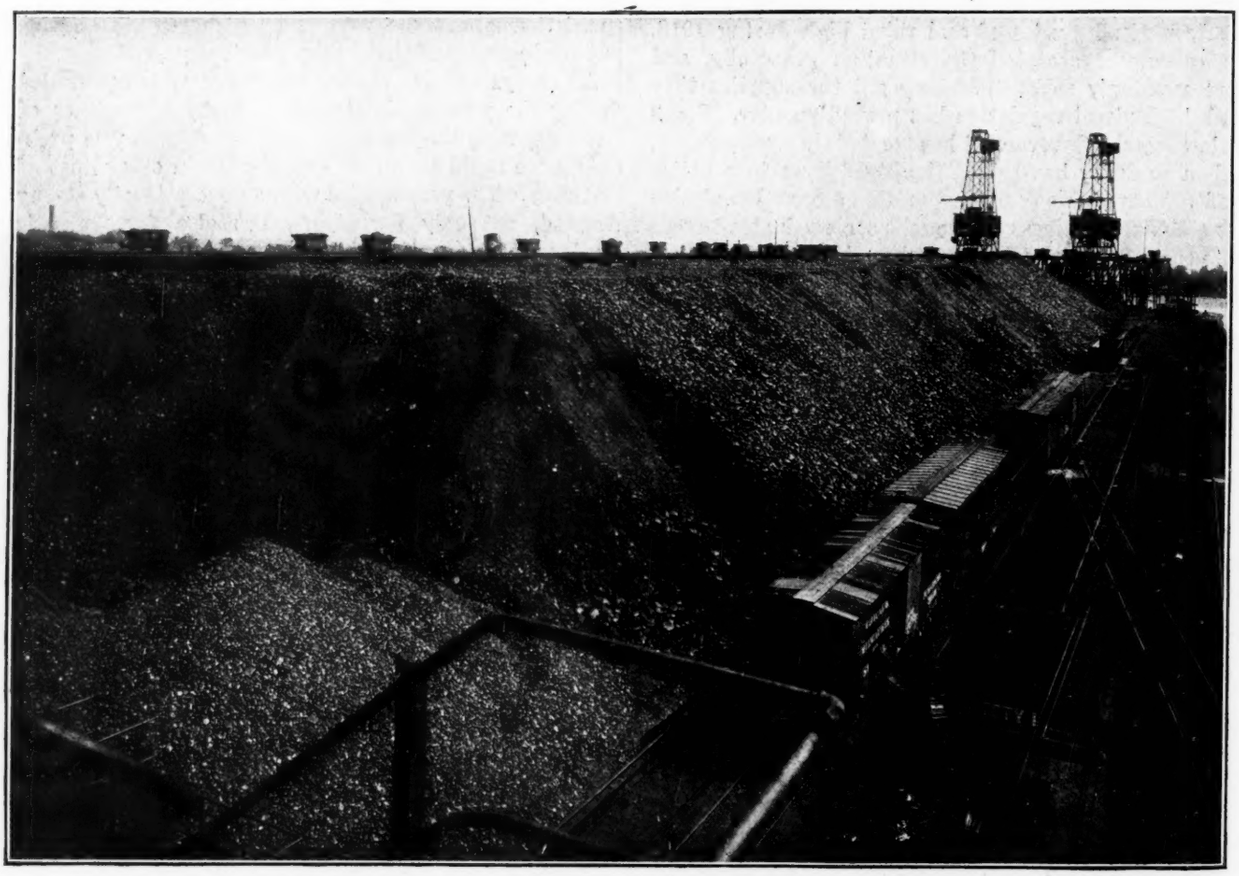
Buying continued strong right up to the day of the signing of the armistice. Then suddenly purchasing agents stopped to look around and size up the situation. Retailers who had accumulated large stocks found that the weather was unfavorable for an early moving of their stocks. Many orders were cancelled and the slump started. As time passed, the slump gained momentum until at the close of the year there was a greatly reduced demand for coal. In fact steam grades were almost a drug on the market, as steam consumers were following the policy of using their reserve stocks and were only buying when they had to.

Some price-cutting resulted, but the larger producers continued to hold their product at Government prices. As a result there was no general demoralization of the market. Of course, production was cut under these circumstances, but toward the latter part of the year it was about 50 per cent. of normal, which was about the same as the production at the first of the year, when it was reduced to that level through car shortage and transportation congestion.

As to the outlook for 1919, there is a wide divergence of opinion among producers and jobbers. Generally speaking, however, the larger and more established operators do not look upon the future with many misgivings. They claim that when present steam stocks are consumed and business gradually gets on a peace basis there will be a good steady demand for fuel.

One of the larger operators, who is a prominent member of the National Coal Association, fairly spreads optimism in his discussion of the future of the coal trade in Ohio, as well as in other parts of the country. He banks a great deal on the undoubted foreign demand which is bound to develop with the reconstruction. He believes that the country will recover rather rapidly from the effects of the world war and that the coal industry will assume a more responsible position than ever before. He believes, however, that there will be a period of slack demand which is inevitable under present conditions. The larger and more substantial operating concerns will emerge in good shape and in a position to go on and improve their status. Those who were pessimists at first have changed their views.

It is true that there was a great spurt in development work in Ohio, as in other coal-producing states, and many of the newer operations were conducted at a high overhead cost. Many of these will fall by the wayside, and the substantial concerns which are operated efficiently and with a low overhead will survive.



MILWAUKEE'S LARGEST DOCK YARD FILLED TO CAPACITY—UPWARD OF 200,000 TONS

Production in Colorado in 1918 and the Outlook for the Coming Year

BY F. W. WHITESIDE
Denver, Colorado

THE coal mines of Colorado during the year 1918 produced over 13,000,000 tons of coal, which is the greatest output in the history of the state. This tonnage was made possible by the efforts of 176 companies operating 223 mines and employing an average of 14,377 men. The previous year the production was 12,515,305 tons of coal, produced by 234 mines owned by 178 operating companies and employing an average of 13,970 men. With the demand for fuel during the year just passed, every possible effort was put forth to bring the production of all mines up to the maximum. The local representative of the Fuel Administration kept in close touch with all the operators and organized a system by which committees were appointed at each mine, consisting usually of six men designated lieutenants. At some of the properties the committees were composed of both local mine officials and miners, at others the entire personnel of the committee was made up of coal miners and others employed in and about the mine. The duties of the committee at each place consisted in keeping in close touch with the men, investigating all absence from work and exhorting each individual to put forth his best efforts toward securing the greatest possible output. While in some localities the result sought was not achieved, in the main a considerable stimulus was given to the men and the result desired was realized to a considerable extent. The average production per man was therefore above that of the preceding year.

ACCORDING to Mr. Whiteside, who is chief engineer of the Victor-American Fuel Co., of Denver, Colo., and a man of broad vision, there is every reason for the belief that this country is face to face with a period of renewed prosperity. Much of the trade that has come to this country from South America and other foreign countries, Mr. Whiteside believes, will be permanent, and he is certain that a vast tonnage of coal will be required to transport all this material and merchandise. Colorado will without doubt receive a fair portion of the increased business in coal and other products, prophesies Mr. Whiteside, as soon as business again assumes its normal activity.

The supply of empty railroad cars for loading was not always dependable, and a considerable tonnage was lost on account of the inability to run the mines steadily, arising from the shortage of cars. This was especially true in the northwest portion of the state known as the Routt County district.

Colorado suffered, as has every other state in the Union, from the Spanish influenza epidemic, which caused a situation so serious at some of the properties that work had to be suspended temporarily. At more than one operation the number of men incapacitated exceeded 25 per cent. of those employed. Most of the mines continued to work in spite of the epidemic, but the efficiency of their operation was seriously affected and their production consequently reduced. Profiting by the experience of last winter, when so much suffering and distress resulted from the scarcity of coal, all consumers were urged to stock up during the summer and early autumn months; this advice was followed to so great an extent that at this time the railroads, industrial plants and many private consumers are buying but little fuel and are depending upon their storage supply. This has caused a decline in the demand for coal, especially for the smaller sizes, and a number of operators have been obliged to dump upon the ground all sizes except lump coal. Consequently few, if any, of the mines have been running full time for the past two months.

The weather conditions always exercise a marked influence upon the demand for coal, this being especially true in the lignite districts; it is often said that a cloudy day or even the weather man's forecast of an approaching storm will stimulate this business. As the fall and winter months up to the first of the present year have been unusually warm and pleasant in the regions where this fuel is consumed, the demand for lignite coal has been light, causing many of the mines to suspend operations three and even four days of each week.

Some of the most popular domestic and steam coals produced in the state are shipped from Routt County. The entire business of this district is handled by the Denver & Salt Lake R.R. This line crosses the Continental Divide at an elevation of 11,660 ft. through a land of perpetual snow. Operating this line with its present 23 miles of 4 per cent. grade over the Divide is a difficult proposition. An unfortunate fire destroyed several hundred feet of snow sheds on the summit in November and caused a suspension of service for a considerable period during their rebuilding; furthermore, a serious cave-in in Tunnel No. 16 tied up all operations for over a month, and the production of this territory has accordingly been seriously curtailed.

It is always difficult to predict business conditions with any degree of certainty, even the best or most carefully planned estimate fails in view of the unknown factors which enter into all such calculations. The present lull in activity is but the inevitable pause

which must be expected to come with the termination of the effort we have put forth for the successful carrying on and completion of the war. It is a common human attribute in a time like the present for enterprises and individuals to rest upon their oars waiting to see what is going to happen When the forward movement again begins they join with the rest, and business will again assume its normal activity.

There is just reason to look for a period of renewed prosperity in this country for a considerable time to come, as much structural and building material must be manufactured here.

A great deal of the trade with South America and with countries over the seas which has come to our doors since the beginning of the war will be retained, and a vast tonnage of coal will be required to transport this merchandise and material to its destination. Much of the building and commercial activity which has been silenced during our participation in the world conflict will be again resumed, thus producing a still greater demand for structural supplies.

Numerous adjustments will have to be made with labor during the coming year. Some of these will not be accomplished without strikes and other delays. It is to be hoped that they will not seriously reduce the coal production.

The question of the operation of the railroads is one which will have a bearing not only upon coal production, but upon all lines of business activity. If the management of the railroads again reverts to their original owners there may be a somewhat serious, though temporary, shortage of cars which will, in turn, affect the coal production.

However, when one considers the efficient manner in which the Government has handled the business of waging war, not forgetting the individual efforts put forth by corporations and individuals alike, there need be no serious apprehension felt for any condition that may arise in the event that the Government ceases to operate the railroads, and any ill effect of this transfer to individual control will be of but a temporary nature and will be soon remedied. It must be remembered, however, that during the strenuous times experienced while the country was at war the control of the railroads enabled the putting into effect of the zoning plan, which not only saved thousands of car-miles at a time when transportation facilities were at their worst, but also enabled the coal industry to meet the manifold demands made upon it.

With labor more plentiful and operating conditions more favorable, the coming year should be one of prosperity in every line of industry. Colorado should receive a fair portion of the immense volume of business that seems assured in coal and all other products, and in the coming year should produce 13,500,000 tons of coal.

The Future of the Coal Industry

By F. S. PEABODY
Chicago, Illinois

I FEEL that there can be no doubt that the coal industry must eventually return to the point where natural laws will once more apply. But this must not come too quickly. There must be no massacre of the industry where the slaughter will be indiscriminate.

Just as the Government, out of necessity, created an artificial situation, so must it of necessity see to it that conditions become normal again. When we entered the war the Government found the coal industry contemplating a hill too steep to climb, and lent a helping hand. We must not now be deserted on the summit. We must be eased down the other slope so that there may be no disaster.

But the Government cannot accomplish this if it is forced to deal with an unsympathetic or unorganized industry. Of all the lessons this war should have taught us, the benefit of concerted action is by no means the least. But with the end of Government control, this road will be closed to us because the anti-trust laws will then resume their functioning.

The President is now abroad, ostensibly for the purpose of showing the world that unrestricted competition, as between nations, is no longer possible. But it will exist in our own country, no matter how disastrous the results may be, so long as the Sherman Law is on the statute books in its present form. We must "clean house" so that we may be fit to take our place in the new scheme of world trade.

If the Government will continue its present form of control until the declaration of peace, and then be ready with an anti-trust law so amended as to allow reasonable cooperation among the members of our industry, we can well take care of ourselves, unless we have failed to be impressed by the great lessons of the war. We already have the machinery we need—the National Coal Association, the National Coal Jobbers Association and the National Retail Coal Merchants Association. And when these bodies, working under a new law, have been made thoroughly representative of the industry, provided only that they continue to be harmonious, and will cooperate they can, and should, become the guiding spirit that is needed.

Lacking some such safeguard as this. the future is not pleasant to contemplate.

Connellsville and Byproduct Coke Industries During 1918

By B. E. V. LUTY
Pittsburgh, Penn.

THE Connellsville coke trade was uneventful in 1918 in the matter of market conditions, for it was under Government price control and there were no changes in basic prices. Furnace coke was limited to $6 a net ton at ovens; foundry coke, 72-hour selected, to $7; and crushed coke to $7.30. One change was made during the year, the size of screen for crushed coke being reduced in June from 1-in. to ¾-in. In August a regulation was made limiting the price of clean screenings, over ½-in. screen, gained from old dumps, to $5.50, this material finding its market chiefly as domestic fuel. It is almost needless to say that furnace and foundry coke commanded the full Government limits throughout the year. Screenings declined fully 25c. under the Government limit in December. Operators were unwilling even to allow brokers any commission on furnace coke, and as Government regulations did not, contrary to the case of coal, permit brokers to charge a brokerage to consumers, there was no margin for the broker. In foundry coke the operators frequently allowed brokers a margin of 25 cents.

Operating conditions in the Connellsville coke trade were altogether unsatisfactory throughout the year, but there were wide variations. The great railroad tie-up of the winter of 1917-1918 scarcely affected any industry or region more disastrously than it did the Connellsville coke region, and yet there was scarcely any railroad freight service more important than that of moving Connellsville coke; for on it depended in great measure the pig-iron production, and consequently the steel production of the country, when steel was an essential for winning the war. Practically every ton of curtailment in Connellsville coke meant a curtailment in steel output.

Poor Traffic Conditions Hinder Output

During the major portion of 1916 the Connellsville region shipped an average of over 425,000 tons of coke a week. In 1917 the average dropped, chiefly on account of traffic conditions, to 336,000 tons a week, which was bad enough; but in 1918, up to the middle of February, shipments were less than 250,000 tons a week. Gradually conditions improved until by the middle of the year shipments were running at 350,000 tons a week. The car service was practically satisfactory, but labor was in short supply, and there were heavy drafts upon the coal resources of the Connellsville region in favor of byproduct coke ovens. As a war measure, on account of the byproducts, every effort was made to put coal through byproduct ovens rather than beehive ovens.

In the late months of the year production of Connellsville coke was seriously interfered with by the epidemic of influenza. Many men were attacked, while on account of the scarcity of help many men stayed at home to nurse members of their families who were affected. Inoculation was practiced to a considerable extent and results from inoculation were quite favorable. So great was the curtailment in output that despite the slackening in the iron industry that occurred after the signing of the armistice Nov. 11, there was a distinct shortage of coke and a few blast furnaces were forced to bank at times, while many operated at reduced blast pressures to conserve their meager supplies of coke.

Connellsville Coal for Byproduct Ovens

The time was, but a few years ago, that the typical Connellsville coke operator could not see but that the demand for Connellsville coke would continue until the coal was exhausted. Any suggestion that the coal would be shipped in large quantities for conversion into coke by byproduct ovens was scorned. The thought of Connellsville coal going through a byproduct oven was regarded almost as an insult to the coal. Eventually events proved otherwise, and in no year was there such a great diversion of Connellsville coal to the byproduct coking process as in 1918. This arose from the double effect of the completion during the year of many byproduct ovens directly tributary to Connellsville coal, and the necessity of operating all such ovens in full oven if beehive ovens had to be closed, because the byproducts were needed for war purposes. For a time the shipments of Connellsville coal averaged 250,000 tons a week, chiefly for byproduct coking. This represented about 40 per cent. as much coke as the Connellsville region had itself made in its best days.

The most important single operation in byproduct coking directly associated with the Connellsville region was the Clairton plant of the Carnegie Steel Co. This plant was projected several years before, and it had been expected to get it in operation in 1917; but the first coke was not made until 1918, in which year the whole 640 ovens originally projected were completed, leaving under construction 128 ovens of a second batch of 640 ovens, the construction of which will proceed slowly.

The Clairton operation contemplated complete elimination of rail movement in both coal and coke, the coal to be towed down the Monongahela River to barges, and the coke to be distributed first to the Carnegie Steel Co.'s blast furnaces that are reached by its inter-plant road, and then, as output grew, to be distributed by water to various other Steel Corporation blast furnaces in the Pittsburgh district. Owing to war exigencies the necessary river craft were not altogether available, and there was much rail movement of Connellsville coal to Clairton. As the plant was being operated with particular reference to byproducts, the coal used was chiefly Lower Connellsville, running about 65 per cent. as to volatility, while the old basin coals run about 70 per cent. The normal operation will be more largely with old basin coals.

In the case of the Clairton operation, as with several

other byproduct plants in the Pittsburgh, valley and lake front districts, the byproduct ovens have been built with the direct purpose of supplanting beehive ovens in the Connellsville region, owned by the same interests, so that the same coal will be used, and by the same interests. In some cases coal from other districts will be used to an extent. In one or two instances blast furnace interests formerly purchasing Connellsville coke have built byproduct ovens, and simply buy coal instead. In one notable instance the furnace interest, being in doubt as to the date of completion of its byproduct ovens, made a contract which should automatically turn from coke to coal upon completion of the ovens.

While the war halted much new construction work, it stimulated work on byproduct ovens, the Government being so much interested in the byproducts, and work was pushed despite the great difficulties. As a result, no less than 2085 byproduct retorts were completed in 1918, against 739 in 1917. In ten years previous the average increase had been about 375 ovens per year, but a few more than that were built, as some ovens were abandoned.

Increase in Number of Byproduct Ovens

According to a statement compiled by one of the largest interests engaged in building byproduct ovens under contract, there were 6756 byproduct ovens in the United States at the beginning of 1917, and the 739 built in that year brought the total at the close of the year to 7495. With the 2085 built in 1918 the number on Jan. 1, 1919, was 9580, with 1620 additional either in course of erection or definitely projecting, pointing to a total in the not distant future of 11,200.

The weekly reports of the byproduct industry, compiled by the U. S. Geological Survey for the purpose of stimulating byproduct coke manufacture as a war measure, furnish interesting information as to both the capacity and the output of the industry and indicate the causes of loss of production. The Survey required that each operator report weekly his capacity and production, assigning causes for loss of production—coal shortage, labor trouble, repairs to plant, no market, and miscellaneous causes.

The coke reports of the Survey were instituted at the beginning of 1918, and a study of the reports through the year suggests that as the weeks passed and operators had occasion to assign causes for the difference between rated capacity and actual production they scaled down their ratings somewhat. Their reports at the beginning of the year indicated a total rating for the country—a few plants did not report at the outset—of 500,000 net tons of byproduct coke a week. This agreed exactly with builders' estimates of 26,005,400 tons annual capacity for the 7495 ovens that had been completed to Jan. 1, 1918, while at the close of the year the operators' ratings totaled about 650,000 tons a week, or 33,800,000 tons annually, while the builders' estimate for the 9580 ovens then completed was 35,211,200 tons.

The reports in the early months of the year showed coal shortage as a predominating influence in restricting output, but later, when there was a fairly adequate coal supply, though frequently not of the description of coal the operator would have preferred, plant repairs, occasional labor trouble and miscellaneous causes were so uniformly sprinkled over the weeks that one is disposed to conclude that a reasonable expectation of output is about 90 per cent. of rated capacity. Taking this at 650,000 tons weekly, the actual commercial capacity of the byproduct coke industry Jan. 1, 1919, was about 30,420,000 net tons a year, with more than 6,000,000 tons in prospect through new construction, pointing to an eventual commercial capacity of 37,000,000 tons, the makers' rating of capacity being 42,800,000 tons. These comparisons would be entirely misunderstood if they were taken as suggesting any criticism of either coke-oven builders or coke-oven operators. In this industry, as in many others, "capacity" is merely a standard to be approached as closely as circumstances permit, and the comparisons made suggest how close the approach can be expected to be.

The rapid growth of the byproduct coking industry exceeds the pace at which new blast furnaces, the chief consumers of coke, are built; and as byproduct ovens will operate if necessary at the expense of idleness of beehive ovens, there must be some idleness of the latter. Taking the beehive capacity at 35,500,000 tons, the 1916 output shown in the table having been the record output in the history of the industry, and the prospective byproduct output of 37,000,000 tons, as computed above, there is a total of 72,500,000 tons.

COKE PRODUCTION IN THE UNITED STATES

	Beehive, Net Tons	Byproduct, Net Tons	Total, Net Tons
1893	9,464,730	12,850	9,477,580
1900	19,457,621	1,075,727	20,533,348
1910	34,570,076	7,138,734	41,708,810
1915	27,508,255	14,072,895	41,581,150
1916	35,464,224	19,069,361	54,533,585
1917	33,167,548	22,439,280	55,606,828
918	30,406,000	26,264,000	56,670,000

The possible consumption can be estimated with considerable closeness. In 1916 the blast furnaces produced 39,534,797 gross tons of pig iron and consumed 44,431,005 net tons of coke, which was 80 per cent. of the country's output, the balance being used in nonferrous metal blast furnaces, in iron foundries and for various heating purposes. The present blast furnace capacity is a trifle under 45,000,000 tons, and with the completion of furnaces now under way it will be about 46,000,000 tons. With the blast furnace industry running full, therefore, it would require about 52,000,000 tons of coke, and with this at 80 per cent. of the country's total consumption the total would be 65,000,000 tons, while as just noted there will be capacity to supply 72,500,000 tons. The slack will be taken up by idleness of beehive ovens, and the shipment of their coal to byproduct ovens. This movement, indeed, began long before 1919.

Next to the textiles, mining is the principal industry in Poland, especially that of coal, which was considerable in the years before the war. The quality of coal mined in Austrian Poland is better than in the German portion. Before the war Russia started to open some mines in Poland, but the work was never completed. Under the German military government the work has progressed, although, of course, it is not possible to make the technical installation as perfect in Poland as in Upper Silicia.—*Commerce Reports.*

Northwest Coal Trade in 1918

By W. L. KIDSTON
Seattle, Wash.

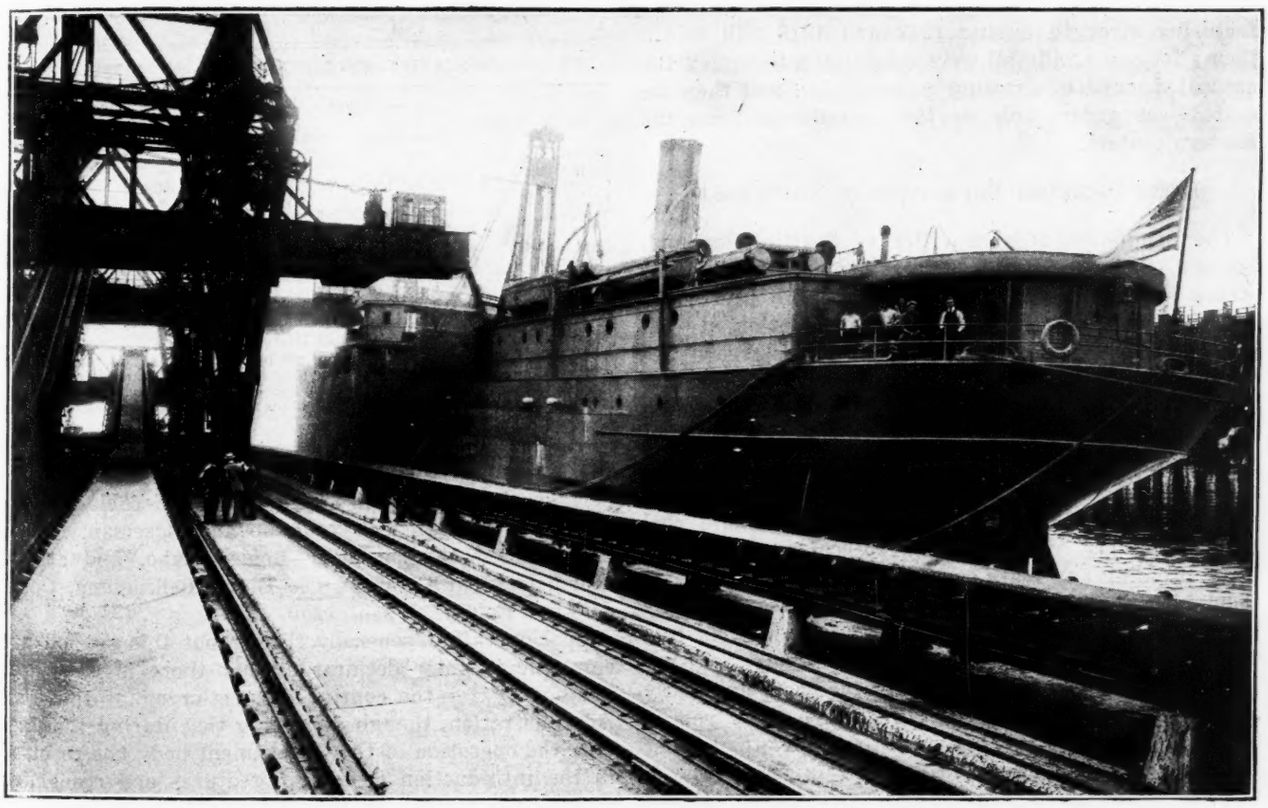
WHILE the abdication of crowned heads in Europe last year proved popular with coal operators of the Northwest, as it did with the rest of the country, it cannot be exceeded by the mine owners' great satisfaction in the way King Coal in this section came into his own, or in the knowledge that the coal mines of the Northwest contributed mightily to the overthrow of Autocracy. While no one expresses much enthusiasm over the profits (or lack of profits) to the trade for the past twelve months, mine owners of this district are justified in expressing pride over the records established in keeping production abreast of the unexpected and enormous demands made upon them by transportation lines, shipyards and war industries.

And as they express great satisfaction over their achievements during the past year, they are unanimous in the opinion that this will bring its reward in the years to come—with greater production and consumption than ever before, and with more settled labor conditions and more equitable profits, all of which will contribute to the prosperity of the entire trade. Coal-mine operators are agreed that the trade in the Northwest will never again return to the conditions which obtained before our entrance into the world war.

There are many reasons why the coal trade in the Northwest in the future should be more desirable and profitable, but to understand this it is necessary that a brief review be given of conditions which the coal trade in this section formerly operated under.

Previously to last year, the coal trade here had more than its share of competition. Hydro-electric energy in the Northwest in recent years has been developed rapidly, and as time has passed electric power has been sold here cheaper than in practically every other section of the country. California fuel oil has of recent years been a particularly aggressive competitor, and due to its cheapness it rapidly supplanted coal burners in many of the industrial institutions of the Northwest, as well as taking the place of coal in the operation of the great fleets of ships which ply the Pacific. Due to the lower wage scale obtaining in British Columbia, and the fact that Canadian coal could be brought into the Northwest duty free, Northwestern coal-mine owners where rapidly losing much needed sleep worrying about where they would turn next to make both ends meet. Great activity in the lumber camps and lumber mills of this section in 1917 resulted in the production of an enormous amount of slab wood, which sold by the cord far under the price for a ton of coal; and as practically every community in Oregon, Washington, Idaho and Montana has from one to several lumber mills, the fuel consumer turned to the cheaper commodity.

However, these conditions changed with great rapidity for the better. Early in 1917 the Government



COLLIER "TUCKAHOE" MAKING A RECORD COAL LOADING IN 2 HOURS 50 MINUTES, MAY 25, 1918, AT THE CURTIS BAY (MARYLAND) PIER

contracted for practically every barrel of surplus oil from the California fields, and the factories, apartment houses and ships which had been converted from coal burners to oil reversed the procedure and once more became coal burners; and it is not likely they will ever go back to the oil-burning basis. Great increases in British Columbia industry shut off the competition from there somewhat, as well as from the lumber mills, which off and on were tied up by labor disputes. War industries and new manufacturing, and shipbuilding plants grew almost overnight, and the coal trade of the Northwest suddenly found that it could no longer meet the demand. Prices rose to greater heights than in many years and continued high until the office of the Federal Fuel Administration was established.

Unlike many Eastern cities, which witnessed the growth of purely war industries that will now be closed down because of the lack of demand for their products, the cities of the Northwest that added to their manufacturing strength during 1917 and 1918 will retain them; for practically all were established to supply the natural demand of growing communities, and they accepted war orders only as they overflowed from the Eastern centers.

Large Increased Population in Northwest

The population of such cities as Seattle, Portland, Tacoma, Spokane, Butte, Boise, Salem, Pocatello and others has increased phenomenally in the past year, which means that the household consumption of coal will be as great as it was last year. It is freely predicted by both shipping interests and coal operators that the increase in foreign trade passing through Puget Sound ports this year will grow so greatly that coal from Washington mines delivered to ships will approximate 50 per cent. more than in any previous year. Industry will take as much if not more coal than it did last year. Northwest coal operators are not expressing any fears over competition from British Columbia mines, for from all reports increased industry in the provinces is taking practically all surplus coal from the mines at home.

Industry throughout the west has increased as greatly as has the population, and coal production has advanced accordingly. While 1918 will probably prove the banner year for the tonnage of coal mined in the West, it will also prove the banner year for consumption of coal in this section. Figures furnished by the mine inspectors of the various Western states show that the Pacific Coast can be independent of the rest of the country as far as fuel is concerned, the estimated production of coal mines in the eleven Western states being 40,339,000 tons for last year, as compared to an estimated consumption of 26,017,348 tons. These figures compare with the 1917 figures as follows: Consumption in 1917, 23,256,707 tons; production, 37,896,380.

The Northwest had to draw largely upon Utah last year to fill the coal bins of the householder and the industrial plants. The figures given in the table accompanying this article show that the coal production in Washington, Oregon, Idaho and Montana was but 9,039,000 tons, while the consumption was 12,592,848 tons, a difference of over 3,500,000 tons. This means that the Northwest coal mines could have produced over three million more tons of coal and disposed of it in their own localities during the year. Had the mines of the State of Washington had the facilities to produce this extra amount of coal, which was shipped in from other communities, they could have secured this business; but operators are of the opinion that it will be a long time before the coal mines of the Northwest will produce sufficient coal to equal the demand.

No new development work to speak of was undertaken in the Northwestern states last year, primarily because of the shortage of labor, the high price of equipment and materials, and the operations of the War Industries Board, which controlled the opening of new mines. Operators in this section are of the opinion that during the next two years there will be greater development of coal mines in Washington, Oregon and Montana than ever before in the history of these states, due to the fact that there is such a great demand for fuel, and the further reason that so little development has been undertaken in the past three years. Considerable activity is already indicated at Roundup and Bozeman, Mont.; in the Teton Valley, near Boise, Idaho, and at the coal fields near Chehalis, Cle Elum, Bellingham, Cokedale and Colville, Washington.

PRODUCTION AND CONSUMPTION OF COAL IN THE WEST

	1917		1918 Estimated	
	Production	Consumption[b]	Production	Consumption[b]
Arizona	[a]	240,000	.....	400,000
California	*	721,190	*	800,000
Colorado	12,433,129	10,158,467	14,000,000	10,750,000
Idaho	*	725,000	*	895,000
Montana	4,400,000	5,378,202	4,400,000	5,500,000
Nevada	*	[d]250,000	*	434,000
New Mexico	4,113,544	270,000	4,200,000	325,000
Oregon	43,000	686,446	39,000	786,446
Utah	4,051,210	400,500	4,100,000	450,000
Washington	4,002,749	[c]4,161,402	4,600,000	[e]5,411,402
Wyoming	8,847,748	265,500	9,000,000	265,500
Totals	37,896,380	23,256,707	40,339,000	26,017,348

[a] No producing mines. [b] Figures include both domestic consumption and coal consumed by railroads operating through the state. [c] 356,000 tons imported from British Columbia and east. [d] Does not include railroad fuel. [e] 180,000 tons imported from British Columbia. * Denotes total production of states so designated as 5000 tons.

Coal operators generally throughout this section are emphatic in their declaration that there is no longer a necessity for the continued functioning of the Fuel Administration, though admitting that during the past year the operation of the Government body has resulted in the introduction of certain features and economies which have materially helped the coal trade. One of the likely developments in the Northwest where large coal mines are in close proximity to large cities, operators believe, will be the locating of steam power plants at the mouths of mines instead of in the cities as heretofore, doing away with the extra handling and hauling of fuel. Another economy which will be carried along after the war will be the elimination of so many retail dealers. The shortage of both labor and railroad cars has awakened the trade to the vital need of storage facilities in the cities. Some communities like Seattle, Tacoma, Portland, Boise, Butte and others where large tonnage was consumed had little or no facilities for the storing of coal last year, and the seaports were backward in bunker facilities for loading ships. Operators and dealers state that this condition will not exist again.

Coal operators likewise predict that the next few years will witness great strides in the burning of

powdered coal in industrial plants of the Northwest, which was the first section of the country to undertake this method of fuel use on a general scale. In the City of Seattle two large power plants, several office buildings, department houses and industrial plants are now burning powdered coal. These formerly used fuel oil. All reports are most favorable to this new method of power and heat generation, the users stating that the powdered fuel is not only cheaper but is more easily handled and gives greater heat per unit than either oil or other classes of coal. Powdered coal is now delivered to the boiler rooms that use it in air-tight auto tank cars, similar to the familiar oil truck. It is the increased development of this method of fuel consumption which will prove one of the big things next year in this section.

Coal operators are not anticipating any serious difficulties with labor. The manager of one of the largest employing mines in the State of Washington states that he does not believe wages will go any higher, and that there will be an abundance of help for Northwestern coal mines. Under the present scale of wages obtaining at the mines a coal miner can earn more than the shipyard worker, now that the Macy award has been decided. The latter is not earning by 20 per cent. what he was when the attractive wage drew hundreds of coal miners to the coast shipyards. The miners are returning in great numbers, and Martin Flyzik, president of the United Mine Workers of America, District No. 10, who early in the year estimated that fully 1500 miners had left Washington mines, states that he does not think more than 380 of these are still out of the mines.

Operators also predict that the mines of the Northwest will produce at least 15 per cent. more tonnage this year than last, and that it would not be surprising if the mines of Washington produced 25 per cent. greater tonnage. With those estimates in mind we may expect a production of coal in the four Northwestern states of at least 10,000,000 tons this year, which would compare with 9,039,000 tons for last year and 8,445,749 for 1917. The coal trade of the Northwest is likewise satisfied with the outlook, due to the fact that it does not anticipate competition with Eastern coal for a long time to come, as a result of the high freight rates obtaining. The new year is being faced with optimism.

Middle West Coal Trade in 1918

By H. A. REQUA
Chicago, Ill.

A REVIEW of the coal industry of the Middle West, during the year 1918, will of necessity deal in extremes. There has existed no normal condition which ordinarily marks the transition of one period to another period diametrically opposite it. The year just ended has been a hectic one for producer and distributor alike. It has been a year of a feast and a famine, with so short a time between the two that there was little if any time for readjustment.

A year ago saw low-grade screenings, loaded from some Indiana or Illinois stock piles, which have been exposed to the weather for years, received by retailer or manufacturer alike, with tears of gratitude. Last week saw these same parties refuse the best coal this territory has to offer, on the shallowest possible pretext. A year ago the mines in Illinois, Indiana and Western territory were unable to take care of the tremendous demands made upon them. Today it is fair to say that the mines in the producing districts just mentioned could run from one-third to one-half time, and still manage to keep the public supplied with plenty of coal. Last January there was, in the Middle West and all over the country, a tremendous shortage of coal-carrying equipment. This year the terminals of the great coal-carrying railroads are cluttered up with strings of empty coal cars, because there is no demand for them at the mines. Twelve months ago the office of the state fuel administration in Chicago was besieged with people begging for coal. A few days ago we read in the paper that the state fuel administration has had to threaten these same people with legal action to make them take in coal ordered during the summer for winter delivery. It has, in truth, been a year of contrasts.

No synopsis of the past year would be complete without mention of the United States Fuel Administration and its activities. During the early months of 1918, each state had its own fuel administrator, appointed by Dr. Garfield at Washington. It was the duty of these state administrators to see to it that their respective states were kept supplied with coal, and that all available coal was divided fairly. In these first days of the year, numbers of the ablest operators and distributors of coal in Illinois and Indiana, in fact the whole Middle West, voluntarily left their respective businesses, and with an unselfishness which was a credit to the nation and the coal industry, placed themselves at the disposal of their state fuel administrators. Their help was invaluable, as their knowledge and familiarity with the coal business was of the greatest assistance to the state fuel administrators, who were usually men without previous experience along these lines. It is not an exaggeration to say that the best brains of the coal industry in the West could be found any time at the offices of the state administrator, working from 8 to 15 hours a day. Although their own businesses needed them as never before, these men placed themselves unreservedly at the service of the administration, and to them belongs the credit of successfully bringing us through a crisis in face of almost insurmountable difficulties. So much for the early days of the administration.

A little later in the year, the various state administrations were well organized, and were coördinating with a high degree of efficiency with the district representatives, who had been appointed by the administration at Washington to look after the production end of the industry, thus allowing the state administrators to give

their attention exclusively to the distributing end of the industry. High praise is due to such men as Dr. Honnold and Raymond E. Durham, of Illinois; W. K. Prudden, of Michigan; Evans Woollen and C. G. Hall, of Indiana; C. E. Reed, of western Kentucky; and W. N. Fitzgerald, of Wisconsin; as well as others too numerous to mention. These men, by their energy, discretion and ability, soon put the coal industry in their territories on a basis that relieved the public from any further worry, so far as an immediate coal famine was concerned.

The rapid changes that have taken place have been vastly interesting to watch, and the eventual development of them will no doubt leave a permanent impression on the industry. For instance, high-grade eastern coals, not including anthracite, will never be as strong in the Chicago market as they were before the war. People have learned, through necessity, of the high quality product from our own coal fields; for example, the Fourth Vein district, around Clinton, Ind. and the producing fields of Franklin, Williamson and Saline Counties in Illinois. This is also true of numerous factories in Indiana and western Michigan, which will undoubtedly continue using coal from our own Mid-Western producing districts, rather than a more expensive product from Ohio or West Virginia.

The history of the coal year has automatically divided itself into three periods, starting with the first of January, 1918, and consisting of four months each. These three divisions may be termed the period of shortage, of plenty, and of overproduction.

The first four months of the year were a record of the struggle on the part of the coal producers to keep up with the tremendous demands made upon them. Difficulty after difficulty appeared and was finally overcome. The supply of coal cars at Mid-Western mines was at a low ebb during all the early months of the year, but this particular situation was most serious during the last half of January and the first weeks of April. Labor was scarce and hard to hold, and it was almost impossible to get the necessary machinery for mining coal, or replacing old and worn-out parts. During this time the public was demanding coal and more coal from the Fuel Administration.

Record-Breaking Tonnage in Summer

From May to August, inclusive, the tonnage of coal supplied by the mines of Illinois, Indiana and western Kentucky was stupendous. The Fuel Administration had, by this time, established its zone system, and this, to a great extent, steadied the industry and put it on a more efficient footing. The public, in the meantime, were buying coal as it never had been bought before, and they were urged on in this by propaganda from the Fuel Administration at Washington, ably seconded by our own state administrators. Soon the zone decreed for the Illinois, Indiana and western Kentucky producing districts had absorbed about as much steam coal as it could hold, although the demand for domestic fuels kept up without abating. In July it was deemed necessary to enlarge our zone, and as a result we were allowed to ship steam coal to points in Michigan, Indiana and Ohio heretofore closed to our products. The bogey of a coal famine was feared, and in order to stimulate further coal production, the Fuel Administration appointed district production managers, whose duties were to see to it that more coal was mined. These men went to work with a will, and the Fuel Administration at Washington was gratified to note the substantial increases in coal produced. All indications showed that the public were buying strong, and all business was booked strictly on a basis of Government price current at the time of shipment.

During the last period, from September to the end of December, the apex of production was reached, and it has brought to light the fact that the zone decreed for us was not extensive enough to absorb the coal we were producing. Early in September there was a decided weakening in the market. At first, as was logical, this affected only the poorer grades of coal, and the demand for our high-grade products continued nearly as strong as before. Gradually, however, the demand lessened, until toward the end of the year there was practically no market for any kind of coal. It is said that during the first two weeks of December one of the best mines in the whole territory, from the standpoint of both quality and preparation of its product, ran only two days. The market started early in October to become serious for the operator, and the gravity of the situation has been increasing from day to day ever since.

Prices Well Maintained at Government Maximums

There is one noticeable feature, and that is, taking all things into consideration, there has been surprisingly little price cutting. The operators feel, and rightly, that our zone is practically glutted with coal, and it won't help, either individually or collectively, to cut prices. There are only two cures for an overproduction, the first being new markets, which unfortunately are unavailable, and the second, underproduction. Underproduction seems the only logical solution of the present problem, as the coal we have produced in excess of normal needs must be consumed before any strengthening of the market can be looked for.

It is almost impossible to forecast what the coming year has in store for the coal industry in the Middle West. At best it is largely a matter of personal opinion. It is pretty generally thought, however, that conditions will eventually adjust themselves, and that the situation will be, in all probability, near to normal long before the end of 1919. The Mid-West coal fields serve one of the richest manufacturing districts in the world. Europe is without a supply of all kinds of finished manufactured articles. The United States must fill this need, and the Middle West may be relied upon to get her share of the business.

It is safe to say that we may look for a period of great industrial activity in the near future. Again, it must be borne in mind, that outside the United States, Canada and Australia, there is practically a universal coal shortage. This means that eventually our eastern coal fields will be called upon to export millions of tons of coal, with the result that our mid-western mines will have to take care of districts logically in our territory, but now served by eastern mines. With one or two prominent exceptions, the larger operators and distributors are inclined to be optimistic as to the future, and as for a present policy, they echo the sound advice of one of our Western bankers, which is, "Until our reconstruction program is well in hand, do nothing hastily."

National Coal Association Now Planning for Peace Activities

With twenty-eight of its thirty-seven members present, the board of directors of the National Coal Association, as a result of meetings held in Washington Jan. 8 and 9, has mapped out a program of peace activities which will be more extensive than the war work done by the association. The board approved of what is expected to be the most extended cost-accounting activities ever undertaken in the coal industry. Traffic matters were recognized as being of unusual importance at this time. Every effort is to be made to see that the interests of the coal industry are considered in each step of the present movement, which may result in fundamental changes in transportation policies.

Arrangements were perfected for close coöperation between the National Coal Association and local associations in the carrying out of the association's plans. The local associations are to be relied upon to furnish the Government with statistical data so as to make possible the availability of the complete information which has been gathered during the war. Through the coöperation of the local associations, the National Association will furnish a market information service which will be national in scope. The meeting also was the occasion for submitting a concrete plan for an export coal association under the Webb Act.

The market service, which was authorized by the board of directors, was explained as follows by J. D. A. Morrow, the secretary of the National Association, in recommending that the service be furnished:

One of the most important things we can do is to give the industry full and accurate market information. This would mean daily advices to the National Association at Washington and branch offices from each local association and a return summary sent back to the local associations. Many other industries are conducting open price reports of this general kind on a national scale, such as cement, brick and lumber manufacturers, steel-furniture makers, pressed-steel manufacturers and others. Coal operators could do likewise, should they consider such action advantageous.

In making this suggestion of trade bureaus, price reports on closed transactions, etc., with national bulletins, I would not, nor would you, of course, countenance any activity that would transgress the anti-trust laws. Everything of this nature must be, and would be conducted in accordance with the advice of competent counsel and in a manner to make it obviously proper and legal.

These local associations could not only collect information with respect to prices, but should also obtain information with regard to production and distribution of their output, car supply, transportation conditions, etc. Information of this kind, which would be of general interest, should also be reported to Washington and would be included in the market bulletins of the National Coal Association along with any data released by the Geological Survey or other Government agencies.

It may be found advisable also to obtain similar information from the chief consuming centers such as New York, Boston, Buffalo, Cleveland, Pittsburgh, St. Paul, Minneapolis, Chicago, Omaha and other cities, and that for the purpose of interchanging such information—it being understood throughout that the information would relate only to past transactions—branch offices to be established at such points as Columbus, Chicago, Kansas City, and at least two other cities, one in the south and the other in the east.

The export coal association necessarily must be an entirely separate organization from the National Coal Association. The purpose is to develop a market for American coal abroad to all operators producing coal of the proper quality. The recommendations in this connection were made by the Foreign Trade Committee, of which George H. Barker, of Columbus, is chairman. The committee recommends the incorporation of the American Coal Exporters, Inc., under the laws of Delaware or New York. It is suggested that the organization be formed without capital stock and that its members pool their export interests in a manner which the committee describes. The plan is to be considered by the operators interested at a meeting to be held in the near future. An extract from the suggested plan of the committee is as follows:

If no capital is required other than such amount as will finance the expense of handling at tide and the expense of keeping records of the association, it would seem that the corporation might be organized not for profit and without shares of capital stock of any kind, in which event the corporation would have members instead of stockholders and the membership would consist of such coal operators as desire to avail themselves of the privileges and undertake the duties of membership.

PRIVILEGES, TERMS AND CONDITIONS OF MEMBERSHIP

Any operator or any local association of operators formed for the purpose of becoming a member of the association and approved by the association producing coal of quality suitable and available for export through Atlantic coast ports shall be eligible to membership in the association.

Each member shall be entitled to one vote.

Each member shall furnish the association such reports as the association may require, giving information, among other things, as to the following items: (a) Total production for the period covered by the report. (b) Tonnage consigned to the association. (c) Car numbers, weights and all necessary information concerning shipments made. (d) List of any and all contracts made for export coal, together with copies thereof. (e) Such other statements as the association may require with reference to the export business of the members. (f) From time to time, as called for by the association, information concerning market, labor,

car supply and other transportation conditions and all other items that are liable to have influence upon the members' production during the succeeding two months.

Each member shall sell its coal at its own expense, subject to the approval of price and terms of sale by the association.

The association is to receive the coal of all its members at tidewater, transfer it to vessels, and keep accurate, detailed accounts of all its transactions. The handling charges accruing at tidewater will be paid by the association and prorated monthly at each port among members on the basis of tonnage moving through that port during the current month.

Each member of the association is to pay its own railroad transportation charges to tidewater and is to pay direct the ocean freight and subsequent charges where coal is sold c.i.f.

Each member of the association is to be responsible for coal shipped to the pool and for demurrage and any other charges accruing in connection with the members' own shipments.

C. E. Lesher, the geologist in charge of coal statistics for the U. S. Geological Survey, and who has been in charge of the statistical work done by the Fuel Administration, addressed the meeting of the local secretaries and outlined some of his plans for the collection of statistics which will be helpful to the coal industry. Mr. Lesher has just been made head of the coal section of the mineral-resources division of the U. S. Geological Survey, which is preparing to extend importantly its work in gathering statistics and information of value to the various mining industries.

George W. Reed, of the Peabody Coal Co., of Chicago, was made chairman of the Railroad Relations Committee of the National Coal Association, and Thomas T. Brewster, of Illinois, was appointed chairman of the Cost Accounting Committee.

Director General of Railroads Indorses Coal-Zoning Plan

Stress is placed on the coal-zone plan as one of the most important factors in enabling the railroads to meet the coal situation, in a report by the Director General of Railroads which was delivered to the White House Jan. 7 for transmittal to the President. The zones, he says, have compelled the greater use of western coal and have resulted in the conservation, for war purposes, of eastern coal as well as permitting the greater production of both by avoiding useless waste of transportation. Continuing, he says:

The experience of the railroads under private ownership, especially with a demand for coal far in excess of the tonnage produced, was that shippers reached out into markets far beyond the territory in which their particular coal had normally been sold in previous years. The result was a very considerable waste of transportation, in that a much greater car mileage, reasonably estimated as running into millions of car-miles, was necessary to supply the country with its normal coal requirements than would have been the case had shippers chosen to content themselves with normal markets.

To meet this situation the Railroad and Fuel administrations jointly established what has come to be known as the bituminous coal zone plan of distribution.

Under this plan the various bituminous coal mining districts east of the Rocky Mountains were separated and each assigned a definite territory wherein it could market its coal. It was further provided that coal from any district could be shipped to destinations beyond the zone allotted to that district only upon permit of the Fuel Administration, which was recognized by the Railroad Administration as constituting exemption from the railroad embargoes which were laid down to give force and effect to the zone plan. This permitted proper distribution beyond zone lines of certain special grades of coal, coal for by-products use being a specific example.

The coal-zoning plan, however, did not merely save car-miles, and thus permit the production and transportation of several millions more tons of coal than would otherwise have been possible; it furnished, in addition, the means of utilizing coal produced in the Plains States, which would not otherwise have been produced. This was made possible by prohibiting the shipment of certain eastern coal to territory in the West which the war program required to be kept in the East.

In analyzing the situation and in telling of the unprecedented quantities of coal handled Mr. McAdoo says:

The most serious situation presented itself in the case of bituminous coal. This condition was the result of three factors:

1. An actual shortage of cars at the mines on account of the number delayed under load in the congested area and the limitations upon transportation due to the extraordinarily blizzard weather;

2. The lack of a systematic distribution, such as the Fuel Administration was arranging to provide; and

3. The dislocation of the New England supply, which was the result of the withdrawal of coastwise steamships, and which presented, on Jan. 1, 1918, the most serious single situation.

The bituminous coal production for the preceding year had been the largest in the history of that industry, approximating 544,000,000 tons, an increase of about 12 per cent. over the preceding year. The severe weather conditions prevailing in January, 1918, resulted in a decreased production, almost entirely due to car supply, of 65,294 carloads. Immediate and drastic steps were taken to remedy this situation and, notwithstanding the fact that the weather continued to be unduly severe throughout February and part of March, the railroads got on their feet, and in February produced an increase of 24,366 cars of coal over the preceding February, and for the succeeding months increases over the respective corresponding months of the preceding year were as follows:

	Cars		Cars
March	38,202	July	150,288
April	64,824	August	130,686
May	87,036	September	128,942
June	92,734	October	89,882

or a net increase for the 10 months of 741,666 cars, or approximately 37,083,300 tons.

New England's necessities have been fully met and the largest tonnage of coal ever known—28,153,317 tons—has been moved to the Lake Erie ports and transported to the northwest, compared with 26,826,000 tons in 1917; 24,692,000 tons in 1916, and 21,507,000 tons in 1915.

For the Lake season of 1917, 479,058 cars of coal were dumped into vessels at the Lake Erie docks, with an average delay of 2.3 days per car, which was the result of the first year's effort at coöperation under a single nongovernmental control between the railroads, the coal producers, and the Lake carriers.

For the season just closed 542,380 cars of coal were dumped into vessels at Lake Erie docks, with an average delay per car of 1.45 days. This very satisfactory result was attained through the coöperation of the coal producers, ore receivers, and the Lake carriers, with the Railroad Administration through the formation of the Cleveland Ore & Coal Exchange.

With regard to the New England situation, the report says:

The budget for New England coal for the coal year beginning Apr. 1, 1918, after exhaustive conferences with

the Fuel Administration and its New England representatives, was decided upon as follows:

Bituminous:	Tons	Anthracite:	Tons
All rail	9,182,200	All rail	5,165,500
Rail and water	20,504,900	Rail and water	5,165,500
Total	29,687,100	Total	10,331,000

Up to Nov. 30 the following tonnage had been moved:

Bituminous:	Tons	Anthracite:	Tons
All rail	7,502,463	All rail	3,887,981
Rail and water	12,228,041	Rail and water	3,058,304
Total	19,730,504	Total	6,946,285

It will be noted that as to anthracite the performance has exceeded the eight months' program by 58,949 tons, while the bituminous has fallen behind 60,896 tons.

Referring to the reconsignment of coal at Chicago, Mr. McAdoo says:

In Chicago terminals, it has been the practice under private control to reconsign practically all coal after arrival. By coöperation with producers, 66 per cent. of the coal arriving at Chicago, in August, was consigned direct to consumer from the mines, and cross-hauling coal between terminal lines was greatly reduced through the same coöperation, whereby coal was used wherever possible upon the rails of the individual road over which it arrived.

With the railroad's fuel bill amounting to $473,000,000 annually and representing the largest single item of operating expense, other than labor, the report devotes considerable space to the fuel conservation division of the Fuel Administration. It says:

This section was created May 1, 1918, with Eugene McAuliffe as manager, and representatives who had had practical experience in the use of locomotive fuel, as well as in its production, were asssigned to each region.

There has been constant coöperation with the Fuel Administration, and a consistent effort has been made to improve the quality of coal purchased for locomotive use, as well as to instruct enginemen in proper and economical firing. The cost of fuel to the railroads, now aggregating about $473,000,000 annually, exclusive of road haul on users' rails, represents the largest single item of operating expense other than labor.

The response made to the work of this section on the part of both officers and men has been of the most extraordinary and gratifying character. Meetings have been held throughout the country, which were attended by railroad officials and men; coal-mine operators and representatives of the Fuel Administration lending their presence and support.

The marked improvement in the measure of supervision and supervising methods established and the specific attention given to the selection and inspection of coal at mines, as well as the economical use of same on locomotives and in stationary plants, has resulted in very material fuel savings on the several railroads, and the revised methods of distribution which have been worked out will result in economy in road hauls.

Every change worked out under the advice of the Fuel Conservation Section has received the fullest approval of the regional directors and the various operating heads, with the result that methods established will be permanently maintained.

While deprived of the stimulus of war necessity, work in the Fuel Conservation Section will move along continuously broadening lines, the recent extraordinary increase in fuel costs rapidly bringing this angle of railroad-operating expense into such marked prominence as to warrant continual refinement in purchasing, operating, and maintenance methods. The determination of the most economical grade of coal for use on heavier-type locomotives, the selection of the best method of obtaining the maximum return in fuel economy from use of the locomotive superheater, the possibilities of the locomotive feed-water heater, and the determination of methods that will reduce the stand-by fuel losses of large locomotives are problems worthy of the most serious consideration.

Fuel Administration—European Commission Reports on Foreign Coal Conditions

The coal situation in Europe is such as to retard reconstruction in Europe to a marked degree, to say nothing of the discomfort and unrest that are arising out of it. This conclusion is based on the observations of the Fuel Administration's commission, which just has returned from a first-hand investigation of the fuel situation in Europe.

No European country has enough coal, the commission states, but the situation in Italy and Switzerland has reached an alarming stage of acuteness.

"The war emphasized the importance of coal, not only as an essential commodity, but as a diplomatic weapon of no mean proportions" the report said. "The present prospect is that it will prove no less a factor to be dealt with in the reconstruction period that is to follow—at least so long as the present potential shortage continues.

"For example, coal bears a very close relation to social unrest. The populations of the European belligerents have, during the war, suffered privations in varying degrees through lack of fuel. Will they continue to endure similar privations in peace times without active protest. Again, should the shutting down of factories, either directly through lack of coal, or indirectly through lack of transportation on account of failure of coal, result in throwing thousands out of work, will not a fertile field be provided for Bolshevism? Italy and Switzerland are today confronted with this situation, and it is an active possibility elsewhere."

With regard to the French and English situations, the report says: "France's production has for some time been 20,000,000 tons per year short of her consumption, and she is today calling upon England for that amount. Belgium during normal times produces 3,000,000 tons a year less than she consumes, but at the moment has in prospect a sufficient supply on account of the prostration of her industries. England, which has always supplied the needs of Italy and France, has suffered a falling off in production from 287,000,000 tons in 1913 to less than 230,000,000 tons in 1918. Her coal for export fell from 77,000,000 tons in 1913 to 37,000,000 tons in 1917.

"It is of interest to note that while all other great belligerent countries suffered a severe falling off in their coal output during the war, the yearly production of the United States is now approximately 100,000,000 tons greater than in 1913."

Other portions of the report will be made available in the near future.

Imports of coal in Hongkong, China, are much below normal and will continue to be so as long as high mine costs and high freights result in extraordinary prices to consumers in that city and in Canton. There has been increased mining of local coal deposits in various districts of Kwangtung and Kwangsi, but the output has not yet reached Hongkong in a commercial way.

Anthracite coal miners to the number of 6000 have been designated for discharge from the army. This figure is given by General March as of Jan. 4.

THE LABOR SITUATION

EDITED BY R. DAWSON HALL

General Labor Review

The year past has ended without any of the general strikes which sometimes appeared likely to materialize. It would seem that the industry should jog along pleasantly from now on, for the worst rut has been passed and the road is smooth beyond. The rut referred to is the general union election on Dec. 10. The various aspirants for office just before the election have to manufacture sentiment. If the feeling is unfavorable to the corporations and the wage scale, there is sure to be some one to take advantage of it and develop it as "the tide that leads on to victory."

So in every section of the country at the union election there is a flood of oratory in which the coal companies are treated most contumeliously. Those wanting reëlection show how valiantly they have assailed "corporate greed" and those who are postulants for the first time declare that if elected they will rectify all injustices. Both parties have to show up the horrible characteristics of the evil they have fought or which they pray that they may be allowed to fight.

ELECTION OVER, DISCONTENT NO LONGER AROUSED

The turbulence of all that oratory is over. Possibly it was not so bad this year as in other years, but in any event we sail smoothly once more into a more pacific sea. However, while the direct reason for scolding the operator is gone, the soreness which that scolding has caused still exists, and of that the insurgency in the northern field of the anthracite region is a symptom.

All of this refers to the unionized regions. In the nonunion sections the election period is relatively a time of peace, for the leaders and the aspirants for leadership are at home seeking from their following a warranty for their activity. They are busy "fixing their fences" to use a political phrase. We may expect that along the Great Sandy and in the western Kentucky region there will be a recrudescence of effort as soon as the results of the election are known. The nonunion sections are getting so few that the forces of the union every day become more potent to subdue them. The fight is apt therefore to be quite strong and the strikes that occur are likely to be generously financed.

SEVERAL WAR-TIME LEADERS SUCCEED THEMSELVES

The election returns are coming in. In a short while, the outcome can be given in detail. There is a danger in premature announcement. Frank E. Waite of DuBois, for instance, was confidently declared to be the president of the great central Pennsylvania district, but now the district tellers have completed their work it shows that John Brophy, the former president, a Nanty Glo man, has renewed his term of office. James Mark and Richard Gilbert succeed themselves as vice president and secretary-treasurer respectively.

In Ohio, Subdistrict No. 5, the district where the Pittsburgh or No. 8 coal is mined in that state, William Roy and Frank Ledvinka are elected president and secretary respectively. This fact has been duly announced from headquarters though at an earlier date the opponents of these two candidates vigorously denied it. In Mason County, West Virginia, an unimportant mining county with about six mines, the election was held Dec. 4 instead of Dec. 10 as ordered. An investigation is being set on foot, but it is likely that only irregularity and not any actual dishonesty will be found.

The Elkins section has been transferred from District No. 16 to District No. 17. The former district had its offices at Cumberland, Md. By the transfer 13 unions come under the jurisdiction of the Fairmont office.

The anthracite region is experiencing some small strikes. At the Marvine colliery of the Hudson Coal Co. in North Scranton about 900 men went on strike Dec. 28. Some of the contract miners complained that something akin to a reduction in wage had been imposed on them, but on Jan. 1 they had a conference with Edward McGlynn, the superintendent, and went back to work.

At the close of the expiring year a strike was called by the machinists in the electrical mining department of the Delaware, Lackawanna & Western R.R. Co., Coal Department. The machinists wanted the same pay that is paid machinists in the railroad department, but Vice President Inglis refused them this concession.

Same Job But A Different Mule

The soldiers and sailors have been promised their jobs back now that the war is over. What that means Albert Bryant has been trying to determine. Albert Bryant had been working for the Pittsburgh & Cleveland Coal Co. at the Gaylord mine, near Martins Ferry. He left to join the army and later came back for his old job and was duly restored to his former place. Then he found that another man was driving his mule and was going to be allowed to drive that mule indefinitely. He got into an argument which resulted on Saturday, Dec. 28, in a strike of all the men employed. The strike ended, however, on the Monday following.

Want Accident Compensation and Cost of Living Equalized

An operator in southern West Virginia is urging that larger compensation be given to miners and laborers out of the compensation fund. He says:

"I am heartily in favor of any change in the compensation laws that will give the laborer his proper proportion of the money now on deposit at Charleston. We operators are contributing millions of dollars to the compensation fund which is being rapidly piled up and is doing no one any particular good. People can no longer live on the $6 or $10 per week which is the maximum amount allowed.

"When the law was made, board at the mines cost $15 per month. At this time the same accommodation costs from $30 to $37 per month, and this rate is likely to continue for some time to come. We should amend the compensation law so as to take away from the compensation commissioner his great power which now permits him to do what he pleases with the fund without question from anybody.

"We should increase the maximum rates of compensation. We should so amend the law that if a man is injured he can be sent to the nearest hospital, the state paying the proper charge. As the law now exists, if a man on the Winding Gulf is injured it takes two days to get him to a state hospital.

"If the man is sent to any other hospital close by, either the company or the man has to pay the bill. If a man has his teeth knocked out, his eyes injured or his face disfigured by powder the state hospital cannot handle the case and he has to be sent to a specialist to be treated, and neither the company nor the individual is required to pay for his treatment.

"As stated before, the coal companies are now contributing enormously to the compensation fund, because their payrolls are double what they used to be, while the rate is unchanged. Where they used to contribute $100 to the fund, now $200 must be contributed."

KEEP YOUR LIBERTY BONDS

SEVERAL dishonest persons know that you have bought Liberty Bonds, and they want to get them from you. They are plotting to exchange them for worthless mining or other stocks which they say will bring in big dividends. If you exchange your good bonds for the valueless stocks of these slick people, you will lose the bonds and never get any interest.

FOR HEAVEN'S SAKE, CLOSE THE BOX!
FAKE STOCK CO.
100
LIBERTY BONDS
DO NOT EXCHANGE YOUR GOOD BONDS FOR THE VALUELESS STOCKS OF THESE SLICK PEOPLE!

Even the best of stocks are none too good. On September 4, last year, fifty of the best stocks were selling at an average price of $90.45 a share. On December 20 of the same year the same stocks could be bought for an average of $57.43. These were all good securities. There are more that are selling at $90 today and will be entirely unsalable four months later.

Don't be a fool and waste the money you work so hard to earn. Play safe or you will come to grief. If the smooth rascals who are trying to sell you these bonds had such a good thing why didn't they go to some one who had money enough to send an expert to look the ground over? Some men will put their money out with somebody they *don't* know at Borrioboolagha who wouldn't think of trusting it with somebody they *do* know in a nearby village. Did you ever know anyone who cleaned up anything investing in one of these distant ventures? You know well that you can't recall any such persons, therefore keep your bonds. Uncle Sam asks you to do so. It will help him and help you.

WATCH IT WASTE AWAY

EDITORIALS

Who Attacks Corporations, Attacks the State

THE Senate and the House of Representatives, together with the President, subject to the Constitution, pass laws enlarging or creating organizations such as the Army, Navy and Fuel Administration and giving them large administrative powers. Practically under the present law these organizations may not be criticized at all. That law has been administered wisely for the most part, and no attempt has been made to suppress constructive comment. Vicious, ill-intentioned, unmeasured, destructive criticism in the interest of our enemies has rightly been condemned and even prosecuted. The line is hard to draw between the two kinds of criticism. No two men would draw it alike, but the line is drawn somewhere, rightly or wrongly, by the secret service and the courts.

There are other organizations which, subject to the Constitution, owe their existence to the action of the Senate and House of Representatives, together with the President—such organized bodies are the corporations. There are also institutions legalized by the articles of Constitution such as private ownership of property. The institution just mentioned and the corporations, as also the Army, Navy and Fuel Administration and like creatures of our organic and statute law can all be legally swept away if we will. There is no radical change that we cannot make by appropriate legislative action.

However, just at present attacks on Government institutions are considered dangerous. It is felt that we attack not only the institutions themselves but the very life of the people for whose advantage and at whose behest the institutions were framed. When we attack them we attack the people—the state. Such attacks are contrary to public safety.

Some people are of the belief that the Army and the Navy and such institutions as the Fuel Administration, won the victory over our enemies. Back of the Army and Navy however stood industry without which the military forces of the nation would have been ineffective. The Fuel Administration merely marshaled the producing corporations. The Government departments all did a great work, but they could not have done it without the productive work of industry.

That productive work might conceivably have been done under direct Government management. For the nonce we are not discussing the question whether the Government would have done it better or worse than any other instrumentality, public, private or benevolent. The point is that to corporations and to private ownership we committed the work of providing the nation with the means of producing the wherewithal for war. They were the implements of industry to which the nation looked to back up the actual fighters. To attack those corporations and their officers unfairly and in a manner to inspire hatred was actually therefore to attack the instrumentalities by which the Government in its death struggle with Germany secured its needs.

Reference has been made to the war now past, but it must be remembered that times are still quite straitened. We still need to watch our steps, and it behooves us still not to assail unreasonably and unconstructively those institutions upon which the nation is relying to do its work. To attack the corporations is to attack the state. To expose the shortcomings of some of them in a reasonable manner as *Coal Age* has often attempted to do is not offensive but rather a duty. It tends to rebuild what is amiss, but we do as ill to criticise them destructively as to impute to the representatives of the Government offenses of which they are not guilty.

Much of the criticism of today is not based so much on the offenses of corporations as on the "greed of envy," as one of the greatest of our past Presidents termed it shortly before his death. That greed is at least as dangerous to the public as that "greed of arrogance" that a moiety of the corporations possess.

We all admit that those who attack the corporations unjustly offend against the corporations, but we sometimes fail to see that such injustice does not hurt the corporations much more than it does the people. Everyone should be interested in knowing the whole truth. A lie is an offense to the body politic. It is a false and mischievous diagnosis of the ills besetting the state. An evasion in telling the facts is also against the public policy. It may well hew at the base of the tree on which the public depends for its shelter.

The downfall of Russia did not so much result from the Government collapse as from the corporational disintegration that followed. Russia would have been a respected nation today if it had been contented merely to unship its Government. But the attack on the corporations has killed it almost irremediably. Not because corporations are essential to economic life. Some kind of existence is possible even under "politician ownership" if the politicians can be compelled to be reasonably responsive to their too often lightly made and lightly borne oaths.

But the politician ownership of Russia was not a responsible ownership, for the politicians of the Soviets who took charge were the least responsible of men and they put men in charge of industry purely for political and not for industrial reasons. Because a man had served a corporation and was not a politician was often considered to be a sufficient reason why he should be prevented from continuing the direction of a intricate and delicately adjusted plant, while a cunning politician, however ignorant of the industry—a mere broom wielder or porter—might hope for preferment to manager if only he vociferated with due diligence and fervor against the man who intelligently conducted that office.

It is because William G. McAdoo realized the excellence of corporational managements and largely retained the corporation men in control, it is because

the public was not so enraged at the railroads as to demand new officials in every department, that has given Government ownership of railroads its present success. However, credit must also be awarded to the spirit of coöperation to which the war gave birth and also to the habit of efficiency that one year of orderly politician ownership under the chiefs of the corporation ownership period (in this case we do not use the word "politician" disrespectfully) could not destroy. If we leave the railroads a few years under real politician control without the war stimulus, without the leadership of such corporation men as McAdoo, with all the disintegrating effects of politics, we shall have a horde of men inefficiently operating the railroads, neglecting their work for the politics of railroad operation, tangling themselves in red tape and treating the public with the arrogance which too often goes with civil-service jobs.

The trouble is that such careful readjustments as Mr. McAdoo has made do not in any degree appease most of those who so busily criticize private ownership. They frankly admit the work is only barely begun. The scrambling of the railroads, they would have, would be the end of railroad operation. Jobs would be given to those who want them, not to those who deserve them. Criticism such as is daily heard would raise wages and lower rates to a degree possible only in a world that neither knows the force of gravity and friction nor is bound by the law that "Two bodies cannot occupy the same space."

Removing Coal Mining from the List of Seasonal Occupations

IF ONLY we could stabilize the coal business so that a little decline in the immediate use of coal would not involve the closing of our plants, we should do a great deal to make conditions in the mines more satisfactory and equitable. If the miner is industrially undisciplined, it is because of the operation of the economic law which we may call the law of the "retention of the shiftless."

Any man who wants steady work will not stay at an excessively seasonal, unsteady job. He needs a daily round of toil to stimulate him, to meet his natural craving for activity. He resents the loss of pay which idleness causes. As a result, where work is unsteady the shiftless are retained and the energetic are lost to the industry. Association with shiftless men and conditions favoring the development of the shiftless spirit gradually create in the steady man that shiftlessness which enables the operation to hold the man to the job despite its many drawbacks.

Steady work makes men reliable workers and enables an industry to retain such men. But with coal (a relatively unstorable commodity that slacks on storage, catches fire and sometimes turns white from the presence of pyrite; that costs so much to store and so much more to load; that takes up so much valuable room near the market and often finds place for storage so rare near the mine) it is hard, though by no means impossible, to provide for storage in such measure as will make summer a time of preparation for winter demand.

The mines are in many ways the ideal places to store coal. A coal-using corporation must in most cases pile its fuel some distance from the point at which it is consumed. To transfer it when needed, it is necessary usually to employ a wagon or a wheelbarrow train, both of which means of transportation are expensive. At the mine the coal can often be dumped near the railroad track without trouble and can be loaded by a conveyor into cars on the track nearby.

The cost of loading is much lower because the work is on a large scale, whereas in a big city the loading may have to be done by shovel because the work to be accomplished is so small that it does not pay to invest in a conveyor. Especially is storage expensive when a corporation has to stock coal on one lot in order to use it on another. If the place chosen for stocking is near a railroad, river or harbor dock, the double haul is saved; but the rental cost of storage is apt to be prohibitory. If it is in a vacant lot, the rental may be quite low, but the double haul and the loading and unloading will make the labor cost of storage unreasonably higher.

This consideration makes the mine seem the ideal place, but there are several disadvantages which militate against its choice as a storage ground. There may not be available ground near the mine; there is the risk that coal stocked at the mining plant may have to stay there because of such inadequacies of railroad and trucking transportations as arise from equipment shortage and strikes; there is the probability that in the event of a mine strike the mine workers will not load the coal, and there is the likelihood in case of a winter of light demand that the purchaser will not pay the storage charge.

He certainly will not pay it unless competition makes him, unless indeed he has been guaranteed that the coal will be stored to his order and not delivered to any other purchaser. Only by such a guarantee will he feel he is insured against the risks of a fuel famine. It might seem on first consideration that if the mine owner were to make a contract with this kind of guarantee he might find it profitable. A price might be made for coal to be delivered in December, but to be mined in the summer and specifically set aside for the use of the consumer so contracting.

The trouble arises that the operator having only a partial supply of cars would not want to surrender the use of them to the purchaser of his summer coal, thus closing down his mines in the winter. The railroad might be asked to concede extra cars for such stored coal, but its interest is all the other way. It desires that all the coal possible be hauled in the summer and a minimum in the winter. It would do nothing to aid summer storage at the mine, and it would be right, for its interest in the matter would be identical with that of the general public.

Clearly then seasonal price variation is the best cure for the seasonal demand. This rewards the summer buyers for the expenses of storage and its interest cost. The railroads and mine workers should assist in creating this variation in price by freight and wage-rate differentials. The operator has always made seasonal concessions and will undoubtedly continue to do so.

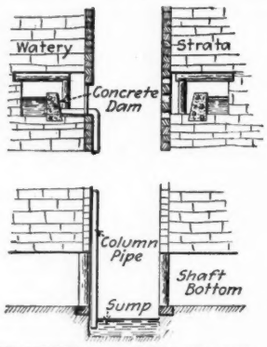
If there is to be any let up in the whole year it should be in the winter, when work on the surface is least endurable, when transportation is most difficult, when embargoes are most usual and when holidays are most frequent. Yet it is precisely when work is coldest and cruellest and in the day of festive celebration that we speed our operations to the limit.

DISCUSSION BY READERS

Freezing of Shaft in Winter

Letter No. 7—Kindly permit me to present what, to my mind, is the only efficient way to handle water in a wet shaft and prevent the freezing of the shaft in cold weather. I offer this in reply to the inquiry of a superintendent, which appeared in *Coal Age*, Nov. 28, p. 1004. My plan is to keep the water from the shaft curbing and there will be no difficulty on account of freezing in winter.

In the accompanying figure, I have illustrated the method of dealing with this trouble, which I believe is the best plan to adopt. It consists of making an opening in the shaft curbing, at a point just above the hardpan and at the bottom of the water-bearing strata. Excavate the strata, here, by driving an opening around the shaft, either next to the curbing, as I have shown in the figure, or back in the solid strata. If the opening is made close behind the shaft curbing it will be necessary to build a concrete dam encircling the shaft, so as to form a basin where the water will collect. This dam is sunk a short distance into the hardpan forming the floor of the opening, so as to make a watertight joint at the bottom of the dam.



DRAINING A WET SHAFT

As shown in the figure, the column pipe passes through the dam close to the floor, thus providing for the draining of what water collects behind the dam and conducting it to the sump at the bottom of the shaft.

In making the excavation around the shaft, it will be necessary to properly support the roof with timbers, either by hitching one end of the collar into the rib, as shown in the sketch, and supporting the other end on a good leg, or by other suitable timbering.

Rawdon, Que., Can. C. McMANIMAN.

Letter No. 8—In connection with the interesting discussion regarding the freezing of shafts in winter, permit me to instance two cases where I had to contend with the same trouble as that described by the Illinois superintendent, whose experience started this discussion. Although I fear that my experiences will simply be a verification of the editor's opinion, as expressed in the reply to the inquiry, I will give them for what they are worth.

The first case was that of a newly-opened, nongaseous mine, ventilated by a temporary, nonreversible fan of antiquated type. The fan was operated as a blower, and supplied about 20,000 cu.ft. of air, against a water gage of less than ½ in. The fan was set at the side of the air shaft with which it was connected by a concrete air drift 7 x 8 ft. in section.

As the water came into the shaft throughout almost the entire depth, it was not possible to collect it at any point before reaching the bottom. In cold weather, this water would freeze so that it was necessary to dig out the ice formed, with picks, every few days. To use the cage for this work was, of course, out of the question, and a swing scaffold had to be lowered into the shaft to support the men while at work.

To remedy the ice trouble, in our shaft, someone suggested the idea of turning the exhaust steam of the fan into the shaft, and this was done, with the result that the next morning the whole shaft was lined with a beautiful coat of frost about 2 in. thick, which showed the folly of that plan.

We next tried putting two radiators in the fan drift, between the fan and the shaft. These were each formed of eight rows of 2-in. pipe 40 ft. long, making 640 ft. of pipe in all. One radiator was placed on each side of the drift. Steam was supplied to the radiators at a pressure of 95-lb. gage. If the radiators had any effect to reduce the freezing of the shaft it was so slight that it could not be noticed. The result was that the pipe was soon after taken out and put to better use, as the men were still compelled to dig out the ice in the shaft, as before. When I left that mine it was the intention of the company to install a modern reversible fan.

AIR REVERSED IN A MINE GENERATING GAS

The second case that I will mention was that of a mine ventilated by an up-to-date fan of the multiblade type, supplying 65,000 cu.ft. of air per minute against a 3.4-in. water gage. Normally, the fan exhausted the air from the mine, and the main shaft was the intake. In cold weather, not only did ice form in the shaft, but also on the track of the main partings and in the entry where water dripped from the roof, and cars were constantly derailed.

Since this was a mine generating both gas and dust, and the latter was highly inflammable, there was some hesitancy about tampering with the ventilation, even for the purpose of doing away with the ice nuisance. Owing to these conditions, the question of the probable effect of reversing the fan was much discussed, the general conclusion being that the change from exhausting to blowing would increase the mine pressure and hold back the gases; but any change from blowing to exhausting would have the opposite effect and cause a greater emission of gas.

It was decided, however, to adopt the experiment, and duplicate doors were then installed on all the main air-courses. These were hung to open in the opposite direction from the doors already in use, the idea being that one door could be set open and blocked, while the other was in use. Less important doors were supplied

with latches to keep them shut against the air, a nail being driven under the latch to hold it up when the latch was not needed.

These arrangements being completed, the fan was reversed on a Saturday night, after the shotfirers had come out of the mine. The examination of the mine the following morning by the fireboss showed the condition to be perfectly normal, there being no undue accumulation of gas in the workings.

The fan was only run as a blower for a short time. As soon as the ice in the shaft was thoroughly melted, the fan was again reversed and run as an exhaust, until the ice trouble again required its reversal. The exhaust system of ventilation was preferred, not only because of the danger of doors being left open in the mine, but for the reason that it was considered safer to haul the coal on the intake air, owing to the generation of gas and dust in this mine. I remember that it was necessary to reverse the fan and run it for a few days as a blower eight times during the winter.

Effect of Reversing the Fan on Generation of Gas Not Observable

Twice it happened that I was in the mine when the fan was reversed. With a safety lamp, I carefully watched the effect produced in a gassy working place, but could detect no change whatever in the quantity of gas escaping before and after the change was made, as indicated by the lamp. Naturally, my conclusion was that the difference in pressure caused by the reversing of the fan was so slight, as compared with the pressure of the occluded gases in the coal, that the effect of the change was practically *nil*.

In closing I will say that, after the doors were once installed on the main roads and the latches placed on the other doors, the reversing of the fan was no trouble. Firebosses and bratticemen were, of course, instructed to watch carefully for doors being left open at times when the fan was run as a blower and the air traveling in the opposite direction to normal.

Floresta, Colo. M. M. Watson.

Iron vs. Wood Mine Cars

Letter No. 7—In the recent discussion in *Coal Age*, concerning the best type of car to use, the question has been asked whether an iron or wood car has been found to be the most practicable for the average mine, with ordinary shop facilities.

The consensus of opinion, I believe, has been that an all wood car will give much better satisfaction than an all iron one. It is claimed that wood cars are more easily repaired when a wreck has occurred, and we all know that these are frequent enough to cause a great deal of trouble. It has also been argued that wood cars are easier on the track, because they are not as rigid as iron cars.

Comparatively little has been said, however, about the composite type of mine car, by which is meant the car with a wood bottom and steel sides. That, to my mind, is the most practical type of mine car that can be devised.

We know that one of the lightest and yet, at the same time, one of the sturdiest automobiles manufactured utilizes a wooden frame instead of an all steel framework, so as to take advantage of the resiliency of the wood. The service records show that such cars have not racked themselves to pieces as quickly as some others. But an automobile is not a mine car and it may be said that the above comparison does not apply here. Still, I would like to hear expressions of opinion from some of our readers who have used the composite type.

Owing to a policy of our management over which I have no control, I have never found it possible to try out any of the composite type of car, in our mines. But, since the question of new cars will very shortly come up and call for action, I would like to be fully posted, so that I can do my part to secure the best car that can be made. I want to ask, also, What type of wheels have given the longest life? By longest life, I mean the life of the tread, flange and hub.

W. Va. Progressive.

Blackdamp on Pitches

Letter No. 2—From my own experience with gas in pitching seams, it is quite clear to me that the gas found at the face of a pitch of 35 deg., in the Buck Mountain seam, as described by "Miner," *Coal Age*, Sept. 19, p. 568, is blackdamp. It would seem, however, that our friend has the idea that blackdamp, like carbon dioxide, is always heavier than air.

As has been explained in the reply to this inquiry, the common blackdamp of coal mines is made up of a mixture of nitrogen and carbon dioxide. In other words, it is mine air deficient in oxygen and containing more or less carbon dioxide, but the nitrogen is usually in excess, as has been shown by the analysis of different samples of blackdamp. The analyses of blackdamp that I have seen show the nitrogen varying from 85 to 88 per cent.; and, in one case, it reached 94.75 per cent. of the blackdamp mixture.

It is easy to see, from many analyses made of blackdamp taken from mine workings, that the mixture is much lighter than carbon dioxide. Also, as is sometimes the case, a small amount of methane present in the mixture will make the blackdamp even lighter than air, in which case it will naturally accumulate at the face of a pitch, or in rise workings.

Temperatures Taken With a Thermometer

After reading the interesting letter of Joseph R. Thomas, Oct. 17, p. 753, I was desirous of making the same experiment that he describes, in our own mine. Securing a thermometer, I proceeded up a gangway to a point where places were being driven on a pitch of 55 deg. One of these places was about 30 ft. above the first crosscut. There was not much air traveling at the face and blackdamp had accumulated there, so that an oil lamp was quickly extinguished and a carbide light became very weak.

After exposing the thermometer for ten or fifteen minutes on the gangway, where I found it registered 47 deg. F., I climbed to the face of the pitch just mentioned, but could remain there only five minutes, as I became very weak. In that time, however, the thermometer registered 57 deg. F. and was still rising when I started down to the gangway.

A little later, I erected a brattice that turned the air and conducted it to the face of this pitch. It was not

long before the gas was removed and the place clear; but a few days later I found the place again filled with blackdamp. This time I reversed the air, forcing it to the face of the pitch, and the gas was removed without any trouble, although the temperature of the return air at that time was 59 deg. F.

Strange as it may seem, on another gangway, where places were driven to the dip, I found the temperature on the gangway 40 deg. F., while at the face of the dip workings the thermometer registered 50 deg. F. Here, also, the mixture extinguished my oil lamp. The gas, however, was quickly removed by turning the fresh air into the place.

As before, we found, a few days later, the place was again filled with the same mixture. At that time, I found greater difficulty in attempting to remove the gas by turning the return current into the dip workings. I have since arranged to have the fresh air current sweep both of these places and there is now no trouble from gas in either of them. JOSEPH LAWRENCE.

Tomhicken, Penn.

Arrangement of Track Scales

Letter No. 1—In reading the article that appeared some time ago in *Coal Age*, the question arose in my mind as to what arrangement of mine-track scales would afford the greatest efficiency in the operation of the mine. Having due regard to expediting the work and, at the same time, securing an arrangement that would effect the greatest economy, the question presented is: Should the track scales at a coal mine be located under the tipple or elsewhere? In expressing my own opinion in this regard, I would like to hear from operators who are using track scales.

As we all know, in the majority of mines, there are usually three or four grades of coal to be loaded; namely, lump, nut, slack and, in some cases, egg and pea coal. When the scales are placed under the tipple it becomes necessary to install a scale on each track, in order to obtain the weight of each car of screenings, as well as that of the lump coal loaded.

DISADVANTAGE OF LARGE TRACK SCALES

Moreover, in order to comply with the requirements regarding the increasing capacity of the cars, these scales must be 72 or 74 ft. in length, which greatly increases the first cost of the installation over that of a regular four-section, 50-ft. scale. The increase in the cost of building the foundation large track scales is no small item.

Consider for a moment a mine that has four grades of coal dumped over the screens, and assume that four 72-ft. scales are installed under the tipple. To keep these scale platforms clean, so that correct weights of the coal can be obtained, will require the services of at least two men and, even then, in bad weather, two men will hardly be able to keep the scales clear. Allow me, here, to make a suggestion that appeals to me as being practical, hoping that it will be discussed and we may learn what others think of the scheme. It is as follows:

Install two 50-ft. scales, one at the head of the empty or storage tracks, where the weights of the empty cars acn be ascertained and recorded as they enter the yard; and the other at the point where the loaded tracks converge, where it will be possible to weigh each loaded car before it is shipped. With this arrangement it will take the weighmaster at the upper end but a few minutes in the morning to have enough cars dropped over the empty scale to run the mine at least half a day. When this is done he can perform the same service at the lower end of the yard, where each loaded car is weighed as it passes over the scale at that end.

SAVING OF TIME AND LABOR MEANS ECONOMY

To my mind, this plan would greatly increase the efficiency of the service. Time and labor would be saved in the weighing of the coal, which means economy. There would be less difficulty in keeping the scale platforms clear, which would mean greater accuracy in the weighing of shipments. Since cars are not continually standing on the scales, but merely pass over them, the life of the scales would be increased.

Those who have had experience with box-car loaders realize that it is especially difficult to maintain a scale in perfect order, under such conditions, owing to the operation of the loader keeping the platform of the scale in constant motion. The wear on the bearings of the scale is such as to greatly shorten the life of the bearings and impairs their accuracy. The bearings of a scale that is not subject to the same jar and motion will greatly outlast those that are subject to the severe service incident to loading the coal.

LITTLE DANGER OF OVERLOADING THE CARS

It may be argued that where the scale is not placed immediately below the tipple there will be danger of the cars being overloaded. To my mind, this is not a serious question, however, as it is practically impossible to overload an open car of 80,000 or 100,000-lb. capacity, and there is never any danger of overloading box cars of over 60,000-lb. capacity. There is frequently a margin of 10 per cent. over or under the marked capacity of cars, and, in this case, the man running the loader soon becomes expert enough that he does not often miss the limit.

In closing, allow me to state my conclusion that the extra cost of 72-ft. scales over those 50 ft. in length, together with the greater expense for foundations, both in respect to labor and material; and, in addition, the greater number of scales required where several grades of coal are to be loaded, make it certain that practical economy and more efficiency are secured when the track scales are not placed under the tipple. I hope to learn the opinions of others. E. C. DODGE.

Denver, Colo. Scale Inspector, American Fuel Co

Locating the Coal Beyond a Fault

Letter No. 7—In mining practice, faults are always annoying and costly to a greater or less degree, depending on the kind and size of the fault. It sometimes happens that, by following certain practical rules that are laid down, the lost seam can be located and development work continued without much delay. In other cases, the work of finding the lost seam is much more difficult and may prove a very expensive operation.

A common rule whose application, however, is restricted to normal or slip faults, is the following: If the fault is first met in the roof and recedes toward the floor, it is a downthrow; but if the fault is first met in the floor and recedes toward the roof it is an upthrow. This is only another way of putting Schmidt's rule, which is "Follow the obtuse angle in the faulted strata beyond the fault line."

It is quite evident that these rules will not apply to an overlap or overthrust fault. In such a fault, it would be necessary to reverse the rule and follow the *acute* angle, in the strata beyond the fault.

Applying the Rule Fails to Check Boreholes

Now, on examining the data and cross-sections shown in Fig. 1 on p. 797, where the correspondent states that the cross-sections shown are taken "looking at the right rib," it appears that this fault was first struck at the floor of the seam and receded toward the roof. Then, according to the rule just given, this should be an upthrow fault, running in a northeasterly and southwesterly direction. However, as proved by the finding of the coal by the boreholes, at a lower level than that in the mine, it is clear that the fault, in this case, is a downthrow.

Putting these facts together, I am of the opinion that this is an overlap or overthrust fault. This opinion is further strengthened by the statement that the appearance of the strata at the face of the main heading, in the fault, shows that the measures had been subjected to a tremendous pressure, as the rock there was much broken.

When a fault is encountered in a mine, it has been my custom to drive through the fault a short distance and examine closely the character of the strata beyond the slip. I would then compare this with the strata passed through in sinking the shaft. In the present case, however, the mine is a drift opening, which gives little opportunity to make such a comparison, although it may be possible to obtain some information from shaft mines in that vicinity if there are any.

Precautions Necessary When Drilling

Where no information is obtainable from this source, it is necessary to resort to drilling. Instead of sinking boreholes from the surface, however, I prefer to drill up or down, in the mine heading. Before doing this, the heading should be driven at least 50 ft. beyond the fault line, and enough top shot down to give sufficient headroom to insert the drills.

The fact that the coal found in the first drillhole was 3 ft. 9 in. thick while that in the second drillhole was 2 ft. 10 in. in thickness, in my opinion, means nothing in respect to determining whether the coal struck belonged to the X seam or the Y seam. It seldom happens that a seam of coal maintains its normal thickness when approaching a fault on either side. I have known cases where the coal beyond the fault would be thinner and other cases where it would be thicker than the seam worked, and this change in thickness will often be observed a distance of 50 ft. from the fault line. My belief is that the coal struck in the borehole belonged to the X seam and that, had the hole been sunk deeper, it would have found the Y seam just below.

West Frankfort, Ill. George Bowker.

Efficiency of Mine Officials

Letter No. 1—I have read a great deal in the columns of *Coal Age* in regard to the efficiency of mine foremen, but have seen little in reference to the efficiency of superintendents, which is a subject that I would like to see discussed by readers, or by some of the superintendents themselves.

My position brings me in contact with both efficient and nonefficient mine superintendents. Some of these have a reputation for efficiency, which to my mind they do not deserve. To judge rightly one must have first hand information. For instance, we see a superintendent on the street each day, with a white collar and seemingly having little care, and we are told that he is 100 per cent. efficient; he is producing coal several cents cheaper than another fellow, both in respect to labor and material.

There must be some reason for this; he must have an excellent organization, first class mine foremen, machinists and labor bosses, who thoroughly understand their duties and business. But you happen to know them personally and know they are not. I have, myself, visited some of these efficient plants. The mine usually has an excellent top, and little water to contend with, which accounts for the low cost of labor and material.

In such a case the superintendent knows little of what is going on at the plant, although the foremen keep reports in detail for his information, I find in many cases he sees these reports, but can he rely on them.

What a Close Examination Reveals

A close examination of many such plants, showing a low cost per ton of coal produced reveals the most wasteful methods in use. Such a condition may be attributed either to the inefficiency of the superintendent, or the failure of the company to provide the necessary labor and material.

Among the many inefficient things that one finds at these plants is the machine gang, where one man is working and two or more looking on. The boss carpenter is ready to sit down half an hour and tell you how things are going around the plant. Pumps need packing, which is generally due to the lack of packing rings or glands. Loss of coal results from water in the working places, the men being unable to work.

At many plants there is a lack of steam power, because of the formation of scale in the boilers, which makes the tubes to leak or the boiler to bag, causing a loss of coal of which no mention is made in the reports. One of the biggest losses underground is due to not having proper supervision of rib falls, and some means of removing posts and rails that have been partly covered up. The foreman generally has a good excuse ready when you see one of these places that should have the rails and posts removed. He will tell you that the rib boss is doing something else and will be here shortly; but he seldom gets there until it is too late.

I might mention several other ways in which waste occurs in mines, but the superintendents of the larger companies, these days, have many things to contend with that require, besides efficiency, some education, tact, a good judge of men, and broadminded, experience. However, I am not sure whether this is so necessary or not, with our uptodate methods in training men. If

has not been so long ago that a young fellow, in a barber shop, shaved and cut my hair. A few months later I found him superintendent at a good sized operation. I have been wondering ever since if this young fellow has some remarkable ability and how his superiors discovered his genius.

I believe that we have too many men in charge of our mines who lack the necessary experience and ability. After a year or more as superintendent they either lose their position or obtain another in time to prevent a complete tie up of the mine by reason of their poor management. Some of the larger companies, who keep an inspector for each department, manage to keep a superintendent who lacks knowledge if the foremen makes up for that deficiency.

Mine foremen, however, often prove failures; and it is at this stage that the superintendent requires tact to get rid of the foreman without incurring the ill will of the mine inspector. There are often young men working in mines who could fill these jobs, and what is lacking can usually be supplied, in some manner or way, so that the operator should not be compelled to go outside to get a man to manage his mine. Let us hear from many and try to learn where the fault lies, and where so much effort in man power and money is wasted, both in coal and in the material used in its production. There is no other business that will compare with coal mining, in respect to money invested and the amount of money lost. Yet we find the most inexperienced men in charge. Let us see if we cannot help in some way to correct the evil and learn just where the fault lies, with the operators or the men.

Uniontown, Penn. WM. GORMAN.

Waste of Coal

Letter No. 2—It was with deep interest that I read the letter of Russell Exline, *Coal Age*, Dec. 26, p. 1176. It was, indeed, a surprise to see the yearly wastage of coal published in such a mathematical summary. It is my belief that many who read the original report and never gave the waste of coal a second thought will be awakened to realize the true situation. While I do not fear a country wide famine of coal, it will be well to adopt the slogan, *We will never miss the coal, till the fire goes out and the bin is empty.*

Mr. Exline, in his letter, suggests a discussion of this question, from a practical standpoint; and let me say that I fully agree with him in the hope to see the ideas of other men on a subject of such vast importance.

It is a well known fact that many people do not consider it worthwhile to save anything that is plentiful. For just that reason, many miners' families waste as much coal in one year as a city family would use in the same time. This waste is carried on in two ways that are very noticeable. The first and most common waste occurs because many families never clean up the coal that the driver spilled while unloading their coal at the shed, but allow it to be washed away with the rain.

Again, by observing the ashpile of many of these families one will see that they are poor firemen, and that they fail to get the heat value out of the coal that they should. When their attention is called to the matter they say that it is the fault of the grate, which passes the coal unburned. It is just here that a good sound discussion of this topic will show the plain facts and teach such people the lesson of, "A dollar saved is a dollar earned." The truth is that, with a proper burning of their coal, they can save the cost of new grates many times over, and learn to be thrifty and better-living people.

There is, unquestionably, a large amount of coal wasted in mining the same. While it is an evident fact that all of the coal mined cannot be marketed, because there is bound to be some waste in its handling and shipment, yet I want to emphasize the fact that a good mine foreman, who insists on his miners cleaning their places well after every blast, will be saving more coal than a person would ever imagine.

SHIFTLESS HABITS IN MINING WASTES COAL

The proof of this statement is shown at a mine where one compares the car accounts of chambers in the same vein and taken to be the same in all dimensions. Having watched with great eagerness the difference in the totals of two such chambers under my charge not long ago, I can truthfully say, that one miner when finishing his chamber had produced 575 cars of coal, while the man in the adjoining room, who was working under my guidance, for the proof of my idea, loaded 618 cars of coal, making a difference of 43 cars of coal in working a single chamber. I am proud to say, here, that the miner who loaded the most coal, in the case just mentioned, used three kegs of powder less than the other miner, who worked so carelessly, and that it took him one whole week longer to finish his chamber. He never cleaned his road, which was dirty and derailed his cars, compelling him to work harder than the miner who followed the instructions given him.

Later, when I made known to the careless miner the difference in the production of the two chambers, he asked for permission to work company work in cleaning his chamber. I granted him this, and when he recovered but 19 cars of coal he claimed that I had made a mistake in my accounting. It was then up to me to show him where the difference was. As he had not driven his chamber with even ribs and the full width, we both measured the width, in a few places, and he quickly saw where the difference of 43 cars in the two chambers existed. He admitted that he did not work to get the most coal per keg, which also gives the foreman a maximum production with a minimum cost. In closing, permit me to say that mine foremen who are working to get the coal out today, under the impression that they may not be on the job the next day, are neither working in their country's interest, nor that of the operator; but practicing a false economy. The sooner such a foreman abandons the idea of losing his job, the better record he will have for producing coal, when he finally resigns his position. The day is past when such a "flash in the pan" foreman can fool his company.

Plymouth, Penn. JOSEPH R. THOMAS.

[Referring to his letter on the "Freezing of Shafts in Winter," which appeared in *Coal Age*, Dec. 26, p. 1175, Jack L. Ball wishes to correct the statement in regard to the weight of the cages, in the next to the last paragraph on page 1175. He writes, "I unintentionally stated that the cages 'weighed between four and five tons.' These cages weigh three tons."]

INQUIRIES OF GENERAL INTEREST

Steam-Heating Plant

Kindly permit me to submit for consideration in the columns of *Coal Age* a question concerning a heating plant that we have installed at our mine. The plan, as proposed, is similar to that of a house-heating system, each radiator has a return-pipe connection leading to the boiler furnishing the supply of steam.

The plant is intended to heat three buildings and dry sand. The arrangement is such that the boiler is below the level of all the radiators and the return, at present, enters the bottom of the boiler. The lowest point in the return pipe is seven feet below the surface of the water in the boiler, and to come to the same level the water must back up 75 ft. in the return.

When starting this plant we filled the boiler with water, leaving the return valve open so as to permit the water to assume the same level in the return pipe as in the boiler. We then opened the valve in the steam pipe and started the fire. As the steam pressure rose, the water began to leave the boiler and, fearing trouble, we attempted to force more water into the boiler. By this time, however, the steam gage indicated a pressure of 40 lb. and the inspirator would not work against that pressure.

We were obliged to abandon the scheme and seek help in solving our difficulty. Allow me to ask whether the return pipe in such a heating system should enter the bottom or the top of the boiler. Please explain the reason the plant failed to work. MAC.

———, Mo.

In a steam-heating system such as described in this inquiry the return from the radiators should always enter the top of the boiler and never at the bottom. Apparently, this was the chief and probably the only cause of the failure of the plant to work.

The fact that the return pipe, in this case, entered the boiler at the bottom allowed the water, as stated, to back up in the return till it found its level 75 ft. away. This completely choked the pipe and prevented the circulation of the steam from the boilers through the radiators and back again to the boilers, as water of condensation. This condensation takes place more rapidly because the lack of circulation prevents quickly heating the pipes.

Now, regarding the water leaving the boiler as the fire was started and steam generated, the steam supply valve being opened, steam entered the pipe system and the cold radiators, where its condensation caused a partial vacuum on the return side. This explains the fact of the water leaving the boiler and being drawn into the radiators through the return connections.

The success of a steam-heating system depends absolutely on a free and unobstructed circulation of the steam from the boiler, through the steam pipe and the radiators, returning as water of condensation to the boiler. Not only should the return pipe enter the top of the boiler but it should then extend downward till the end of the pipe is well submerged in the water in the boiler, at or near the bottom. Without this submergence live steam would enter both the supply pipe and the return alike, which would effectively prevent circulation and block the system.

An Extraordinary Water Gage

Allow me to refer to an examination question answered in *Coal Age*, Oct. 24, p. 798, the next to the last question on that page. Following is the question:

What pressure and power would be required to produce and maintain an air volume of 150,000 cu.ft. per min., through an airway 8 x 10 ft. and 3000 ft. long? What would be the total power exerted by the fan engine if 70 per cent. of the power was expended on the air?

The calculations of the pressure and power required to produce this circulation appear to be all right, and yet the pressure shown (95 lb. per sq.ft.) is far too great for actual practice in coal mining. It represents a water gage of $95 \div 5.2 = 18\frac{1}{4}$ in. and I want to ask where the trouble lies, as something must be wrong. Still, I have checked over the figures and find no mistake.

Common practice, I have always understood, is to ventilate a coal mine, under a water gage of two or three inches at the most. Is the question a practical one; or is it intended to mislead a candidate and cause him to think his calculation is wrong? Such a water gage could not be measured with the ordinary mine gage, which seldom reads more than four or five inches. One would need a tube fashioned after the style of a standard mercurial barometer, about a yard long.

Springfield, Ill. CANDIDATE.

We are glad to have this inquirer draw attention to this question, which any practical man realizes does not represent actual ventilating practice in coal mining. To carry a velocity of 1875 ft. per min. a distance of 3000 ft., including the return, would not be considered by any operator of experience.

We do not wonder that our friend suggests the possibility of the question being intended to test a candidate's confidence in his calculations. There are good practical men who, on obtaining a result showing an 18-in. water gage, would conclude that their work was wrong and throw it aside, ashamed to submit it in answer to the question.

We believe this question is an unfortunate oversight of the examining board, who did not stop to consider its impracticability. No examining board charged with the duty of examining practical men, to ascertain their individual fitness for the positions they seek, would be justified in asking a question intended to mislead a candidate. It would be a deception for which the candidate is wholly unprepared, and as such is unfair to many whose chief asset is their practical knowledge.

EXAMINATION QUESTIONS

Miscellaneous Questions

Answered by Request

Ques.—To what extent is coal dust found in the mines of Illinois? State fully the cause of its existence and how you would protect life and property from the dangerous effects arising therefrom.

Ans.—The mines of Illinois are, as a rule, dry and dusty to such an extent that special precautions have to be taken, in the operation of the mine, to prevent disaster.

The cause of dust, in coal mines, is primarily due to the soft and friable nature of the coal. The trouble is greatly augmented by the practices followed in the mining of the coal, however. Machine mines are almost invariably dusty mines, because of the large quantity of machine cuttings, "bug dust." The excessive use of powder in blasting the coal; shooting off the solid; failure to properly mine a shot are all causes of the undue prevalence of dust in mines.

To properly safeguard a dusty mine everything should be done to reduce to a minimum the quantity of dust produced in mining, blasting and hauling the coal. Remove promptly all accumulations at the working face; enforce strict regulations regarding blasting; clean and sprinkle roadways and air-courses and use dustproof cars.

Ques.—Two airways, one circular and the other square, each have an area of 81 sq.ft. and a length of 2500 ft.; what is the difference in the rubbing surfaces of the two airways?

Ans.—Since the circumference of a circle is equal to 3.545 times the square root of its area, the perimeter of a circular airway whose area is 81 sq.ft., is $3.545 \sqrt{81} = 3.545 \times 9 = 31.9$ ft. For a length of 2500 ft., the rubbing surface of this airway is $2500 \times 31.9 = 79{,}750$ sq.ft.

Each side of a square airway having an area of 81 sq.ft. is 9 ft. in length. The perimeter of this airway is, therefore, $4 \times 9 = 36$ ft.; and the rubbing surface, for a length of 2500 ft., is $2500 \times 36 = 90{,}000$ sq.ft. The difference in the amount of rubbing surface of these two airways is $90{,}000 - 79{,}750 = 10{,}250$ sq.ft.

Ques.—What instruments are necessary for a mine foreman, in the performance of his duties in the mine?

Ans.—The mine foreman should have and use the following: An anemometer for measuring the velocity of the air in a mine; a watch for observing the time; a tape for measuring the size of the airway for calculating the quantity of air in circulation. He should have and use a water gage, for determining the unit of ventilating pressure or pressure per square foot producing the circulation in the mine or any split or section of the mine. He should have a barometer to observe changes in atmospheric pressure, and a hygrometer to determine the degree of humidity of the mine air. The foreman should have a good safety lamp for observing the gaseous condition of the mine. He should have a compass to determine the direction of rooms and headings and to give sights. In an inclined seam, he should have a slope level for determining the degree of inclination or pitch of the seam.

Ques.—Supposing there are two airways, one is 4 x 12 ft. and the other 8 x 8 ft. in section; how much more air will pass in the one than in the other, with the same pressure?

Ans.—Assuming these airways have the same length and the perimeter of each being the same, for the same unit pressure producing the circulation, the quantity of air will vary as the square root of the sectional area. In other words, the quantity ratio will equal the square root of the area ratio. Therefore, the ratio of the quantity of air circulated in the second airway to that in the first airway is $\sqrt{64} : \sqrt{48}$; or 8: 6.9, which shows that the 8 x 8-ft. airway will pass $8 \div 6.9 = 1.16$ times the quantity that the same pressure will pass in the first airway.

Ques.—The velocity of the air in an airway is 5 ft. per sec. and it is required to increase this to 8 ft. per sec., what increase in pressure will be required?

Ans.—For the same conditions in the airway, the pressure producing a given circulation varies as the square of the velocity. In other words, the pressure ratio is equal to the square of the velocity ratio. But, the velocity ratio, in this case, is $8/5 = 1.6$, and the square $1.6^2 = 2.56$. Therefore, in order to increase the velocity of air from 5 to 8 ft. per sec., the pressure must be increased 2.56 times the original pressure.

Ques.—How would you approach the burning section of a mine, in case the conditions necessitated the sealing off of the burning section? What steps would you take to insure the safety of the workers and the success of their work?

Ans.—Without a further knowledge of the situation in the mine, the location of the section that is burning and the headway gained by the fire, this question can only be answered in a general way. The safety of the men and their prompt withdrawal from the mine is the first consideration, while there must be no delay in taking steps to arrest the progress of the fire and extinguish the same, if that is possible. Assuming, however, as the question states, that it is necessary to seal off the burning section, experienced men must be selected for this work. Equipped with the necessary tools and material, they must proceed to approach the section from the intake side. Only safety lamps must be used, and no attempt to seal off the section must be made until all the men have been withdrawn from the mine except those to be employed in the work. Wherever it is practicable to do this, the building of the necessary stoppings should be started at the return end, so as to reduce the liability of an explosive mixture forming in the inclosed space. Much will depend, however, on the conditions surrounding each particular case.

COAL AND COKE NEWS

Harrisburg, Penn.

United Mine Workers of the Lehigh field are not in sympathy with the insurgent movement started by some of the men in the Lackawanna and Wyoming Valleys, according to reports received from that section. Leaders of the union state that reports claiming an attendance of 300 delegates at a recent convention were exaggerated, and that only 114 men were there, and these not fully accredited from their locals. Miners here feel that action of the insurgents would tend to split the organization.

With the settlement of their grievances, the 900 striking employees of the Marvine Colliery of the Hudson Coal Co., in North Scranton, who have been out since Jan. 3, returned to work on Jan. 7.

Report of the Anthracite Board of Conciliation for the coal year ended Mar. 31, 1918, just issued, makes a volume of 363 printed pages. It shows that during the period all manner of grievances as to working conditions, rate scales to apply, payment and work in dispute were formally brought to the attention of the board. There came before the board 175 formal grievances, 154 from employees or their representatives, and 21 from the operators. Of the 175 cases considered, 39 were voluntarily withdrawn by complainants, 42 adjusted amicably, 47 withdrawn without prejudice. There went to the umpire 57 cases. He decided 23 against the mine workers and 22 in their favor. There was no answer to the board for decision in one instance, and one case was pronounced retroactive. In addition 34 cases are held under advisement during the year.

Operators cannot evade the payment of specified wage rates by calling an occupation or a place by some other name, ruled Charles P. Neill, umpire of the Anthracite Conciliation Board, in a decision handed down on Jan. 9, sustaining the complaint of contract miners at the Halstead colliery of the Delaware, Lackawanna & Western Coal Department, at Duryea. The ruling is retroactive and carries with it a large amount of back pay.

The miners claimed a higher rate for gangway work. The company, it is alleged, set up a highly restricted interpretation of what a gangway is and tried to create the issue that the passages where the complaints worked were airways.

The umpire said that he understands fully the difference between gangways and airways, and while he admits that the passages in the controversy were not so wide as the usual gangway, he asserts that the tunnel was used for the purpose and he refuses to read into the language of the anthracite wage agreement meanings that were clearly not in the minds of the parties who made and signed these contracts.

The Anthracite Board of Conciliation announced on Jan. 9 that it has denied the request of coal operators for the abrogation of the war-time rule that $150 be paid the families or heirs of miners killed or fatally injured at work and that, in consideration of the payment, the colliery shall not suspend the day of the funeral.

Protests have been filed with the Labor Department by International President Frank B. Hayes, of the United Mine Workers, against the importation of Mexicans into the mining regions. He cites action of certain operators in bringing Mexicans into the anthracite fields.

Uniontown, Penn.

Sales of coal lands in Green County aggregating $2,500,000 were approved this week by Referee in Bankruptcy J. G. Carroll upon petition of the trustees in bankruptcy of J. V. Thompson. Involved in the sale are what is known as the Rockwell and Dorsey deals. The sale price averaged $450 per acre.

Denial that J. V. Thompson dominates the liquidation of his vast estate is made in the answer filed by the Thompson creditors committee to the petition made here in equity asking for the dissolution of the committee. The answer sets forth that the estate is under the jurisdiction of the court and that it only can permit or prevent the trustees in bankruptcy in carrying out its provinces. The petition was made by the trustees in bankruptcy of Isaac W. Semans and executors of the estate of George L. Hibbs, heavy creditors of Mr. Thompson.

After floating several miles down the Monongahela River, the tipple of the Redstone mine, Pittsburgh Coal Co., lodged against the abutments of the Sunny Side tipple. The structure was virtually undamaged, but will likely be broken up and rebuilt at Redstone. The tipple was loosed by the recent high water on the river.

Morgantown, W. Va.

The United States railroad administration has removed the differential in freight rates on coal shipped on the Monongahela and the Baltimore & Ohio from Monongalia County, and henceforth the rate prevailing on the Baltimore & Ohio will be in effect. This differential amounted to 15c. a ton in favor of the shippers on the old road and in the Fairmont district. Coal from the Tait mines at Randall, for instance, could be transported across the river and shipped for 15c. a ton less than on the Monongahela, the road which should logically handle it. For some time the North American Coal Co. and other companies on the Monongahela have been fighting for the removal of this differential. The new rates apply to all that part of the region south of the West Virginia-Pennsylvania state line.

Ever since the Monongahela was constructed, shippers on the lines of the Baltimore & Ohio from Fairmont, Clarksburg, Philippi and intermediate points have enjoyed what is known as the West Virginia regional rate. This was 15c. a ton less than the rate for shippers on the Monongahela, and necessarily placed the Monongahela operators at a great disadvantage. According to the schedule of tariffs now issued and made effective, Monongahela shippers will get the West Virginia regional rate, 15c. a ton less than they are now paying. This applies to practically all points, east and west, though there are possibly a few exceptions of no great importance.

The rate to coal operators on the Morgantown & Wheeling is now the same as the rate to shippers on the Monongahela. This removes a charge of 40c. a ton to the Scott's Run operators, and with the removal of 15c. a ton on the Monongahela gives the Scott's Run region the benefit of a total of 55c. a ton.

Fairmont, W. Va.

Prepayment of freight will not be exacted from operators of the Fairmont region as originally determined upon by the Railroad administration, at least for the present, protest against such prepayment of freight having been registered by the Northern West Virginia Coal Operators' Association, with C. H. Markham, Philadelphia, regional director of the Allegheny region of the United States Railroad Administration.

F. J. Patton, secretary of the association sent the following telegram to Mr. Markham: "This association, representing production of twenty million tons annually, requests that the instructions providing for prepayment of freight on coal not be made effective Jan. 1, and further that such instructions not be made effective at a future date, until hearings are held and producers given an opportunity to be heard."

In commenting on the protest Mr. Patton said: "All operators in the Fairmont region who have coal to be shipped to tidewater points would be obliged to prepay the freight if the new order became effective. All cars are billed at Keyser and would have caused no end of inconvenience to the local operators because the freight payment would have to be made at Keyser."

Charleston, W. Va.

Production in the Pocahontas and Tug River districts reached its lowest point at the end of 1918, only 156,838 tons being produced. This is only about one-third of the capacity of the district. The tonnage lost reached a total of 211,152, the biggest factor in such a loss being labor shortage which cost 194,430 tons. From car shortage there was a loss of 6586 tons and from mine disability 5127 tons, while no market was responsible for a loss of 5000 tons. The market for Pocahontas coal is unusually quiet. There was a material reduction in the coke output, only 30,166 tons being produced.

With a supply of cars in excess of any seen during the whole of 1918, and with a ready market for its product, conditions in the Fairmont district, contrary to conditions existing elsewhere in the state, are very satisfactory, the only serious factor in holding back production being a shortage of electric power. As showing how liberal the car supply has been it is only necessary to point out that during the week ending Jan. 4 the supply was never under 2000 cars a day and ran as high as 3300 cars a day. It was impossible of course to load all the empties furnished.

With the removal of certain embargoes against tidewater shipments from the New River district and with the prospects of additional coal-carrying vessels being available, the outlook in the New River district was somewhat brighter although embargoes still in effect tended to cut down production. There was no trouble experienced with the car supply and there was no shortage of labor. Existing embargoes, as stated, were responsible for holding production down to 81,984 tons during the first week of the year. A slow market and a large number of men out also held down production.

Conditions existing throughout December in the Kanawha district remained unchanged during the first week of the year, even a cold spell, general throughout the country, failing to stimulate the demand to any great extent, reserve stocks, according to Kanawha operators, being sufficient to meet any immediate demands. With coal still debarred by zone restriction from many markets and with buying at low ebb, business in the Kanawha district is unusually quiet, so much so that production for the week ending Jan. 4 was cut to 84,247 tons though allowance must be made for the fact that only 50% of the mines filed reports, all of which showed 2639 working hours with a total loss of 1637 working hours. Of that loss 849 hours were due to labor shortage; 78 hours were due to car shortage; 225 hours were due to mine disability and 340 hours to no market.

McAlester, Okla.

Coal mines and local shippers are overwhelmed with orders for coal from Oklahoma, Kansas, Colorado and Texas. Orders have more than doubled since the recent severely cold weather set in. Mines are working overtime, and where during the summer and fall months there was threatened abandonment of the mining camps due to departure of miners to seek other employment, there is now a wild scramble among the miners, each seeking to get all the work and put in all the overtime possible.

While many operators blame the people for not heeding the advice of the Fuel Administration and laying in a supply of winter fuel during the summer months, others declare it is due to the shortage of natural gas, which has been used extensively for heating. The heavy demands have so reduced the supply of natural gas that many families have abandoned it as fuel for heating and are depending on coal.

With the decline of the natural gas production, coal operators see a great future to the coal-mining industry. Vast undeveloped deposits of coal underlie much of the land of Pittsburg and adjoining counties, and capital is needed for their development. With the growing demand for coal and large profits from the money now invested, additional investment is sure to follow and new mines will be opened.

As indicating the extent of the coal mining operations in the immediate vicinity of McAlester, it is disclosed that the payroll of the coal mines amounts to $850,000 every fifteen days, or 1¾ million dollars a month.

PENNSYLVANIA

Anthracite

Jeddo—The G. B. Markle Coal Co., one of the largest independent concerns in the anthracite field, has put another gang of Mexican laborers at work at the mines. A month ago 100 Mexicans were also given employment by the Markle Company.

Oneida — Through effective preventive measures taken by the Lehigh Valley Coal Co., influenza outbreaks that menaced fuel production at a number of small mining towns around have been squelched. There are only a few cases in these towns at present, and danger of another epidemic has passed.

Beaver Brook—Owing to the high rate of wages paid drivers, runners and company hands about the mines, there is a scarcity of contract miners according to operators. The men prefer "company work," because they are assured of a regular income and are not exposed to the dangers encountered by the men who blast the coal.

Lansford—Six federal and state fuel administration investigators have arrived in the Lehigh region to investigate the cause of habitual absenteeism on the part of some of the miners and to suggest methods of correcting the trouble, which has hindered production to a considerable degree. They are scrutinizing the time sheets at the collieries, and it is understood that "pay-day drunks" will receive special attention.

Plains—M. J. Healey won a substantial verdict in his suit against C. C. Bowman, of Pittston, when the jury awarded him $13,019 on his claim of $14,000 on overpayments under a coal sales contract. In the trial of the case, which lasted for three weeks and was bitterly contested, Mr. Bowman presented as a set-off a counter demand of $32,000, alleged to be due him as commissions and other fees, but this claim was ignored.

Pottsville—The pay for the middle of January throughout the anthracite region will mark the delivery of paid-up Liberty Loan Bonds to the various workers who have completed their payments under the schedule arranged at the time the bonds were purchased. Some of the coal companies will have its paymasters hand the bonds to the workers when paying their wages. A congratulatory speech will accompany each bond.

Wilkes-Barre—The school for miners at the Y. M. C. A., which has been successful during the past ten years, postponed from Oct. 15 to Jan. 7, has opened. The school is for men working in and about the mines, who want to better understand the principles of their work and be prepared for advancement. It is a course covering three regular years' work with an extra year of preparatory work men for who have had the privilege of a common school education. The fact that a man has his fees returned to him upon graduation ought to encourage a large number of ambitious men to take this course.

Scranton—Since the Davis mine cave law went into effect, back in 1913, only three companies operating in the city have complied with its provisions relative to supplying the city with maps of the mine workings underneath the streets. This fact was brought out at council meeting on Jan. 7.

A steam main supplying the school administration building in the 400 block Washington Ave., has been broken, due to mining operations, it is thought. For several weeks heavy blasting has shaken the building, and it is believed that slight settlings have been the cause of the cracking, although a close inspection has failed to reveal any evidence of settlings in the building itself.

Bituminous

Pittsburgh—The Consumers' Fuel Co. is rebuilding its tipple at Downs Station, W. Va. Roberts & Schaefer Co. of Chicago, have been awarded a contract for the necessary changes.

Big Run—McClure Brothers have opened a new mine near here in a vein of coal which has never been worked to any great extent in this section. A switch from the Buffalo, Rochester & Pittsburgh R. R. has been installed and shipments begun.

Greensburg—The Pittsburgh Coal Co. has completed negotiations for the purchase of two tracts of coal properties, comprising 2200 acres of Pittsburgh seam coal, fronting on the Youghiogheny River, and about 1400 acres in the Rehobah Church section, both in Rostraver Township.

Homer City—The new mines of the manufacturers Coal Co., on Yellow Creek, near Meco, are fast rounding into form. The incline plane and tipple has been completed, and it is expected that coal shipments will be begun in January. The mine is located on the Snyder to Possum Glory branch of the Pennsylvania Railroad.

Evans City—Edward Empfield, who has been general manager and actively engaged in the supervision of the Big Creek Coal Mining Co. mines near here, has sold his interest in the company to Pittsburgh capitalists and retired from the mining business. John L. Lowther has been made superintendent of the Big Creek mines since Mr. Empfield retired.

Du Bois—Unless a way is found to put under control the blaze now raging in a large tract of coal on the Black Diamond Mining Co.'s operation; four miles beyond Luthersburg, thousands of tons of coal will be consumed. The fire, which has been burning for more than two months, started in an airshaft, and is believed to have been caused by boys. An attempt is now being made to install a stationary pump to work until the fire is put out.

Greensburg—The Pittsburgh Coal Co. has purchased two big blocks of the Pittsburgh seam of coal in Rostraver township, one of 2200 acres fronting on the Youghiogheny River, and the other of 1400 acres, in the Rehobah church section of the same township. The latter tract runs almost to the Monongahela River, at Webster. For the 2200-acre block the coal company paid Mrs. Elizabeth Moore, of this city, $4,000,000, and $1,000,000 was paid for the other tract. This land was purchased 25 years ago for an average price of $50 an acre.

Harmarville—The Inland Collieries Co., has begun experimenting with a cement gun in its mine near here, to ascertain whether a coating of gumite on the roof will prevent spalling and roof falls by keeping the air from acting on the roof. The workings are in what is known as the Double Freeport vein, with a slate roof, and troubles with roof falls are frequent in various sections of the mine. Cross I-beams, which at present are being used on nearly all headings, will be eliminated if the gumite accomplishes the purpose intended. Thomas G. Fear, Harmarville, Penn., is general superintendent.

Punxsutawney—The Onondaga Coal Mining Co., which is reopening tne old Onondaga mines of the Buffalo & Susquehanna Coal and Coke Co. near here, have installed two large buckets in place of the cages. These buckets, with a capacity of fifty barrels each, are hoisted at the rate of one per minute. In addition to this method of dewatering the mine hydraulic pumps are being used, and the water is gradually going down. A contract has been awarded for a new steel tipple, including preparing machinery, rock disposal plant and power house equipment. The plant is expected to be in operation this spring.

WEST VIRGINIA

Williamson—Fire visited the plant of the Steele Coal Co. at Mossy Bottom on Jan. 3, destroying the store and office buildings. An overheated stove set fire to the building. The loss entailed amounted to about $20,000.

KENTUCKY

Willard—The Little Fork Coal Co., after running into a fault in its first location, has recently opened a new entrance and started shipping again. Robert Gunning is manager.

Ivel—The Regal Block Coal Co. is ready to ship coal from its new plant, which is equipped with machines for cutting from a 42-in. seam. Pocahontas field interests are behind this mine.

Willard—The Lick Creek Coal Co. has installed a compressor outfit and is ready to operate a coal-punching machine at its local mines. J. W. Kitchen, of Ashland, Ky., is general manager of the company.

Lexington—The Zella Mining Co., after being promoted by R. D. Clere, of Ashland, Ky., was recently sold, and the new owners are now in shape to start shipping from a new operation on Beaver, near Lachey, working a 5-ft. gas coal seam.

Sutton—General construction work is now in progress in connection with a number of improvements being made at this place by the Frank Coal Co., of which H. H. Frank is superintendent. This company has also built a large number of new houses.

Prestonburg—Arrangements are being made by the Colonial Coal and Coke Co., operating at Prestonburg, Ky., to enlarge the company's operations, new territory having been acquired near the present operation. It is proposed, however, to use the same tipple for both operations.

Frankfort—It is reported that the Long Fork Coal Co., one of the new operations on the Baltimore & Ohio R.R. extension, in Floyd County, Kentucky, along Beaver Creek, has recently changed hands, and is now under the active management of W E. Jones. The plant is located at Drift, Ky.

ILLINOIS

Springfield—Mine A of the Citizens' Coal Mining Co. has resumed operation after a shutdown of two months. About 100 of the old employees returned to work; there are vacancies for 50 more, which will be held open a reasonable time. The mine has a capacity of 1000 tons a day.

Carbondale—George R. Sheldon, of New York, for eight years treasurer of the Republican National Committee, is in a serious condition as a result of injuries sustained while inspecting a mine at Dowell on Jan. 8. Mr. Sheldon, who is a director of the Union Colliery Co., at Dowell, was crushed between a coal car and the rib of the coal.

O'Fallon—Eight St. Clair County men passed a mine examination at Springfield this week. They were Sam Hoopway, of O'Fallon, and Arthur McGee, of Marissa, mine examiners; George Grainger, Belleville, mine manager; Marshall Orr, Belleville; J. E. Copeland, Marissa; Arnold Steinkamp, Mascoutah; Harry Luechtefeld, Lenzburg, and Edwell Eddings, hoisting engineers.

Springfield—The closing of mines in Sangamon County, as a result of overstocked coal conditions, has caused considerable hardship among the miners, many of whom have lost much time because of the influenza epidemic. Of the 29 mines in Sangamon County, only two were said to have worked every day in December. A number of the miners worked two and three days, with the result that there were seven thousand miners in Sangamon County out of work for all or part of the time.

Marion—The Wickham-Burton Coal Co., of Chicago, has purchased the White Ash mine here from the Johnston City Washed Coal Co. This is one of the oldest operating mines in Williamson County.

The new mine of the Orchard Coal Co. east of here, near Pittsburg, and one of the most up-to-date in southern Illinois, has recently hoisted its first coal. It is an entirely new field, heretofore considered impracticable for mine development.

Belleville.—The Missouri-Illinois Coal Co. has filed an injunction suit in the Circuit Court here against the White-Sergent Coal Co. to restrain it from suspending operation of the Wilderman mine, leased by the plaintiff company to the White-Sergent company. Under the lease, which runs for 21 years, it is alleged that the White-Sergent company bound itself to mine all the coal in the mine and not shut it down. But the mine is now idle, and it is alleged that the equipment in the mine is being ruined by the accumulating water. Under the lease the White-Sergent company pays the Missouri-Illinois company 2½c. per ton for all coal removed from the mine.

Carlinville—What indicates another large enterprise for Macoupin County is now under way. A drill for the testing of the coal under a tract of 12,000 acres in Hilyard, Polk and Brushy Mound townships in Macoupin County, and also lands in Madison County, have been placed in the field by the Sullivan Drilling Co. for A. W. Crawford. One drill is located on the Anderson land near Plainview and another has been received and will soon be located in another section. This is the initial work of developing this 12,000 acre coal field, and if the drilling tests show a good thick vein with a good rock roof, it is said that options will be closed for the land and the field purchased and developed by some large corporation. Mr Crawford is the man who promoted the sale of 30,000 acres of coal rights to the Union Fuel Co. and also 30 000 acres to the Standard Oil Co. of Indiana, the latter company now developing its field. The Union Fuel Co. has not done any developing, but it is rumored on good authority that this field will be opened within the near future.

Foreign News

Berne, Switzerland—An arrangement has been perfected between France and Switzerland by which the latter is to be furnished with 60,000 tons of coal monthly from the newly occupied mines at Saarbrucken. Switzerland requires 200,000 tons of coal monthly, and as she is getting virtually none from Germany, is in dire straits for fuel.

Sydney, N. S.—The opening of a new mine on the Cumberland coal areas of the Dominion Coal Co. is announced by President Mark Workman, of the Dominion Steel Corporation. At the new mine, which will be known as the workman mine, coal has been reached a few feet below the surface. Other new sections of the company's extensive areas will be opened up as circumstances permit.

Personals

John Madill has resigned his position as superintendent of the Stanley Smokeless Coal Co. mines at Dias, near Indiana, Penn.

A. A. Straub, general manager of the Connellsville office of the Superba Coal and Coke Co. has been transferred to the Pittsburgh office.

George A. Cokely has resigned his position as superintendent of the Tide Nos. 1, 2 and 3 mines of the Tide Coal Mining Co. near Homer City, Pennsylvania.

Joseph W. Wear, Philadelphia, Penn., formerly general secretary to local Fuel Administrator Potter, has been appointed assistant fuel administrator for Pennsylvania.

William Reid has resigned as mine foreman for the Cowanshannock Coal and Coke Co., at Yatesboro, Penn., to become superintendent of the new mines of the Dor-Mar Coal Company at Savan, Pennsylvania.

John E. Evans, formerly assistant sales manager and general purchasing agent of the Bell & Zoller Coal Co., of Chicago, Ill., has been appointed general sales manager of the Mikesell Brothers Co., also of Chicago.

L. B. Lewis, better known as "Doc" Lewis, has resigned as superintendent of the Acme Coal Mining Co. at Rimersburg, Penn. He will devote his time to looking after his personal operations in Clarion County, Pennsylvania.

H. K. Schoch, chemist, late of the National Bureau of Standards, Washington, D. C., and **George R. Cowan,** briquetting engineer, late of Ellington Field, Texas, have resumed their positions with the General Briquetting Co., 25 Broad St., New York, N. Y.

S. T. McMillen, formerly superintendent of the Fulton Run shaft of the Jefferson and Clearfield Coal and Iron Co. at Ernest, Penn., has accepted a similar position with the Caldwell Smokeless Coal Co. at its several mines near Heshbon, Indiana County, Pennsylvania.

C. B. Rowe has been appointed manager of the Superior Fuel Co., near Russelton, Allegheny County, Pennsylvania, effective Jan. 1, 1919, to succeed **Cavel Robinson,** whose resignation was recently announced. Mr. Rowe was formerly with the Consolidation Coal Co. in West Virginia.

Jonn Stone, mine foreman of Coal Run No. 1 mine of the Coal Run Mining Co. at McIntyre, Penn., has been promoted to superintendent of the Tide Coal Mining Co. mines at Tidedale, Penn. Mr. Stone was formerly mine foreman for the Penn-Mary Coal Mining Co. at Heilwood, Pennsylvania.

Lieutenant George Hodges, former superintendent of the H. C. Frick Coke Co. at Collier, Penn., has received an honorable discharge from the service and has been named superintendent of the Frick mine at Continental No. 1. **R. H. Barry,** superintendent of that mine, has been transferred to Colonial.

William E. Lohm has resigned as general superintendent of the Ellsworth Collieries Co. The duties of the office are now and will continue to be filled by W. A. Luce, general manager, who has transferred his headquarters from Pittsburgh, Penn., to Ellsworth, to be more convenient to the operations.

E. S. Harman, Pittsburgh, Penn., assistant to Richard W. Gardiner, local fuel administrator, production manager of bituminous coal in the Pittsburgh district, and commissioner of the Pittsburgh Coal Producers' Association, has resigned to become sales agent for the Carnegie Coal Co., with headquarters in the Oliver Building.

F. D. Baker, late chief engineer for the Colorado department of the American Smelting and Refining Co., and from its inception in 1906 engineer of construction for the Carbon Coal and Coke Co., at Cokedale, Colo., retired Jan. 1, 1919, after twenty years' service. Associated with his sons, Mr. Baker will do a limited consultation work in Denver.

Col. C. A. Burrell, who before the war was chief chemist of the Bureau of Mines, and who, since this country entered the war, has been engaged in the important war work of developing the various noxious gases used by the allies, and who was recently discharged from the army, has allied himself with the Mine Safety Appliance Company, of Pittsburgh, Penn.

C. J. Brown, who has been connected with the sales divisions of the R. D. Nuttall Co. for the past three years, has become associated with Frank M. Erb, representing in the Pittsburgh district the Silver Manufacturing Co., National Forge and Tool Co., Horsberg Forge Co., and Meadville Malleable Iron Co. Mr. Brown will be located at 902 Second National Bank Building.

George H. Cushing has resigned as editor of our contemporary, *The Black Diamond,* to assume the position of Managing Director of the American Wholesale Coal Association, with headquarters at Washington, D. C. We believe that the American Wholesale Coal Association are to be congratulated on the choice of their Managing Director, as Mr. Cushing has long been identified with the coal industry. In his official capacity as editor of *The Black Diamond,* he has come in contact with both the producer and jobber of coal, and in our opinion is singularly qualified to fill with satisfaction the new position he has accepted.

Obituary

Howard G. Dewey, president of the New York State Coal Dealers' Association, died on Jan. 6, at his office in Gloversville, N. Y.

Benjamin R. Whitcomb, aged 57, owner of the mine of the Vermilion County Coal Co., died of Bright's disease Dec. 31. Mr. Whitcomb owned much other valuable real estate in and about Clinton. A widow, four sons and a daughter, survive.

T. H. Wilding, superintendent of the Wickham and Mabscott mines of the New River Co., died on Thursday, Dec. 26, of pneumonia which followed a severe case of influenza. He was ill less than ten days. A wife and twelve children survive him. Mr. Wilding was 46 years old. He had been associated with the New River Co. for eight years.

John E. Williams, Federal Fuel Administrator for the State of Illinois from the inception of Federal control to July, 1918, died Jan. 2 at his home in Streator, Ill. Mr. Williams, who was 65 years of age, was born in Wales, his parents emigrating to America while he was yet a boy. His life, which started with 15 years' work in the coal pits of Illinois, was concluded with his occupying a high place as labor arbitrator and in other public service.

Industrial News

Charleston, W. Va.—The Imperial Coal Sales Co., of this city, announces the reopening of its Western office, in the Union Central Building, Cincinnati, Ohio, effective Jan. 1, 1919. G. M. Kearns is Western sales manager.

Washington, D. C.—Removal of all restrictions as to shipments of anthracite coal of "egg" and "pea" sizes is announced by the Fuel Administration. This action was made possible, it was explained, by an increased supply and accumulation of these sizes.

Louisville, Ky.—Closing of all distilleries and breweries is being felt at the present time, as these concerns were good consumers. From present indications there is little chance of getting this business back again, as the prohibition movement appears to have settled the fate of the industry.

Washington, D. C.—All orders and regulations as to fuel conservation, except one relating to natural gas, were withdrawn on Jan. 10 by the Fuel Administration. Regulations as to zones and prices and some others remain in effect, but in accordance with the announced policy of the administration the question of fuel saving is now once more a matter for individual determination.

Louisville, Ky.—The R. E. Wathen Co., large consumers of coal when operating the R. E. Wathen Distilling plant, will again be in the market for coal, as the concern has turned its attention to corn milling, and erected a new corn mill adjoining the distillery on the Illinois Central tracks, south of Louisville. Power will be furnished from the power plant of the distillery.

Lexington, Ky.—The Colonial Coal and Coke Co. has arranged to spend $50,000 on improvements on the Chesapeake & Ohio, facing the Big Sandy River, near Prestonburg, Ky., where it is developing 1000 acres of high-grade domestic splint coal. An aërial tramway is planned for this mine. The mine now operated is one of the oldest in the district, but is slowing down in production.

Charleston, W. Va.—An effort is being made to have a miners' hospital established at a point convenient to the Coal River mining section, operators in that field being behind the effort to have this hospital established. Operators in the Guyan field are also behind a move to have a state miners' hospital established at Logan by the Legislature. It is claimed that none of the present miners' hospitals are accessible to either of these fields.

Hazard, Ky.—The annual dinner meeting of the Hazard Coal Operators' Exchange has been postponed until Jan. 21. It was found that a great many of the operators belonging to this organization would be unable to be present on the date first set for their meeting, as it was necessary for them to be in Washington on business connected with the National Coal Oeprators' Association. R. A. Hord, the Secretary of the Exchange, is expecting 100 per cent. attendance on Jan. 21.

Harrisburgh, Penn.—The Public Service Commission has recently handed down an interesting decision in a case brought by McPhilomy & McPhilomy, trading as the Franklin Coal Mining Co., Brisbin, Clearfield County, against the Pennsylvania Railroad Co. for refusal of permission to load coal into cars from wagons. The commission holds that the action of the railway company was "unjust, unreasonable and discriminatory," and has ordered the payment of the sum of $500 for damages.

New York, N. Y.—The Wilkes-Barre Coal Co. has contributed $50 to the New York County chapter of the American Red Cross in compliance with the request of Delos W. Cooke, Federal fuel administrator for the State of New York, dated Dec. 23, 1918. This penalty was exacted for delivering coal without a permit to the customer of another dealer, such delivery being a violation of the rules of the United States Fuel Administration. The Wilkes-Barre Coal Co. waived its right to have this case reviewed at Washington.

Buffalo, N. Y.—The Buffalo Wholesale Coal Association was organized on Jan. 8 with W. D. Ward, president; J. Bert Ross, vice president; F. J. Durdan, secretary and treasurer, and the officers and C. L. Couch and E. C. Roberts, directors. A constitution and by-laws were adopted. Meetings are to be held every second Wednesday. The association is the resultant of the Bituminous Coal Committee, which was maintained as a sort of semi-organization for some time, with E. C. Roberts as chairman. He declined to become the president.

Oklahoma City, Okla.—Oil and gas wells now being drilled in Okmulgee County, Oklahoma, reveal extensive coal beds underlying almost the entire county. At least two veins of coal have been encountered in every hole drilled, and in many wells more and thicker veins are found. Coal has also been found under Tulsa, Creek, Wagoner and Muskogee counties, and plans are now being perfected for the organization of several mining companies to exploit these coal deposits in connection with the oil industry.

Cleveland, Ohio—An important meeting of Ohio operators was held at Cleveland recently when action was taken to oppose the methods of the purchasing department of the United States Railroad Administration in breaking the price of coal when buying for railroad fuel. A resolution was adopted by the representatives of about forty large operators providing for the naming of a committee of four operators to coöperate with a similar committee of miners in Ohio and also to coöperate with operators' and miners' committees in the other three central competitive states. These states are Illinois, Indiana and Western Pennsylvania.

Springfield, Ill.—One bill of interest to miners which will be introduced in the next session of the Illinois legislature will be the establishing of safer appliances in Illinois mines. The abolition of the carbon lamp may be asked, on account of its danger in igniting gaseous air. Electric lights on miners' caps may be required. It is said that the electric lamp has never been much favored by Illinois miners because of the expense in upkeep. Alterations will be asked in the child labor law, the workmen's compensation act, and changes in various wage scales for organized laboring bodies. The legislative committee of the Illinois State Federation of Labor and the United Mine Workers are busy preparing a number of other bills to be introduced.

MARKET DEPARTMENT

Weekly Review

Coal Industry Marking Time—Indications Point to Early Resumption of Activity—Bituminous Demand Inactive—Anthracite Market Without Any Snap—Mild Weather Militates Against Urgent Demand for Coal.

UNTIL the nation's reconstruction program is well in hand the coal industry can expect no such period of prosperity as preceded the signing of the armistice. At the present moment the demands for bituminous steam coal are few. A number of large consumers who have cut into their reserve stocks are making inquiries, though of real active buying there is *nil*. The better grades of soft coals can naturally find a more ready market than coals of an inferior grade, of which there is a surplus. It is now a buyer's market instead of a seller's.

Indications would justify the conclusion, however, that these conditions will change for the better beginning late in February or early in March. By that time the country's readjustment plans will have been formulated and placed in motion, industry will have reorganized on a peace basis, the Government will have relinquished its control of coal, and export demand for coal and manufactured products will be unprecedented.

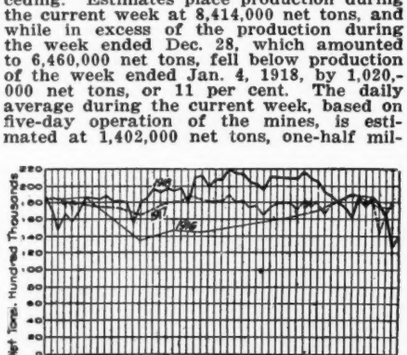
The output of soft coal, in the meantime, though nowhere near the maximum capacity of the mines, is still sufficient to take care of current needs. This does not apply to high-grade fuel, the demand for which exceeds the supply. During the week ended Jan. 4 the production of bituminous coal is estimated at 8,414,000 net tons, bringing the total production for the coal year to date to 456,243,000 net tons.

The anthracite market is without any snap, and dealers and consumers both are buying in a desultory fashion. This can be attributed chiefly to the remarkably mild weather for this season of the year. Restrictions have been removed by the Fuel Administration on egg coal, and this size can move untrammeled wherever a demand for it exists. Pea coal is as plentiful as ever, and there seems to be no shortage of either stove, egg or chestnut. Only a long-continued spell of severe wintry weather would serve to tighten the anthracite market.

During the week ended Jan. 4 the output of hard coal is estimated at 1,389,000 net tons, which brings the total production for the coal year to date to 75,219,000 net tons, approximately a million and a half net tons below the output of last year.

WEEKLY COAL PRODUCTION

Bituminous — Considerable improvement occurred during the week ended Jan. 4 in the production of bituminous coal, the output being estimated at an increase of 1,954,000 net tons, approximately 30 per cent. above the production during the week preceding. Estimates place production during the current week at 8,414,000 net tons, and while in excess of the production during the week ended Dec. 28, which amounted to 6,460,000 net tons, fell below production of the week ended Jan. 4, 1918, by 1,020,000 net tons, or 11 per cent. The daily average during the current week, based on five-day operation of the mines, is estimated at 1,402,000 net tons, one-half million net tons behind the daily average of the coal year to date and approximately 350,000 net tons behind the similar period ending Jan. 5, 1918. Total production this coal year to date, estimated at 456,243,000 net tons, exceeds that of last year by 34,248,000 net tons, or 8.1 per cent.



Anthracite—Anthracite production during the week of Jan. 4 improved to the extent of 100,000 net tons over the week preceding and is estimated at 1,389,000 net tons, as against 1,317,000 net tons during the corresponding week of 1918. The daily average during the current week, based on a five-day operation of the mines, is estimated at 278,000 net tons for the coal year to date and 320,000 net tons for a similar period of last year. The total production for the period Apr. 1, 1918, to Jan. 4, 1919, is estimated at 75,219,000 net tons and falls below production of the 1917-18 coal year through Jan. 4 by approximately a million and a half net tons.

Loading reports received from the carriers for the week ended Jan. 4 show an improvement in all fields compared with the week ended Dec. 28. The central and western Pennsylvania, Cumberland-Piedmont and Somerset and Fairmont fields, in which the demand for all coal mined is good, were also the only fields to show improvement in the number of cars loaded over the corresponding week of 1918. In the Illinois, Indiana and western Kentucky district the decrease in cars loaded, compared with the week ended Jan. 4, 1918, was approximately 10,000. The new calendar year figures begin with this issue.

New England Shipments—Shipments of bituminous coal to New England during the week ended Jan. 4 are estimated at 295,991 net tons and exceed the shipments during the week preceding by approximately 53,000 net tons. The receipts through the rail gateways, as well as shipments from each of the harbors, show considerable improvement.

Tidewater Shipments—Shipments by tidewater also increased considerably, estimates placing the tonnage for the week at 662,476 net tons, as compared with 583,072 net tons during the week ended Dec. 28. Considerable improvement occurred in the tonnage shipped from New York, Philadelphia and Baltimore, while shipments from Hampton Roads declined approximately 16,000 net tons, or 7 per cent.

Beehive Coke—The production of beehive coke in the United States for the week ended Jan. 4 is estimated at 496,000 net tons, as compared with 440,000 net tons during Christmas week. The current week's production, while an increase over the week preceding, fell 72,000 net tons or approximately 13 per cent. below production of the corresponding week of last year. In the Connellsville district of Pennsylvania operators produced 253,923 net tons of beehive coke during the week of Jan. 4, operating their plants at 69.8 per cent. of their full time as compared with 68.2 per cent. during the week ended Dec. 28.

Byproduct Coke—Necessary repairs to byproduct plants during the week of January caused production of byproduct coke to decrease approximately 14,700 net tons compared with the week ended Dec. 28. The current week's production, however, was far in excess of the production during the corresponding week in 1918, the increase amounting to approximately 162,000 net tons, or 42 per cent. The plants of the country were operated at 84.6 per cent. of their full time during the week ended Jan. 4 and out of total losses of 15.5 per cent., 9.1 per cent. was attributed to repairs to plants, 3.2 per cent. to lack of market and 2.5 per cent. to other causes. During the week of Jan. 5, 1918, the byproduct ovens of the country were operated at 80.4 per cent. of their full time and were limited in their operation at that time mainly by lack of byproduct coal, of which today there is practically no shortage. Considerable fluctuation in operating conditions occurred during the week in Alabama and Maryland.

BUSINESS OPINIONS

Marshall Field & Co.—Current wholesale distribution of dry goods is running lower than for the corresponding week of 1918. Road sales for immediate delivery were in excess while for future delivery they were less compared with the same week of last year. More customers were in the house. Collections are good.

American Wool and Cotton Reporter—Justas soon as a basis of wool values can be established many believe it will be possible to sell cloth in at least moderate quantities. The minimum prices established in Great Britain are no fair indication of what values will be on a supply and demand basis. The stocks of wool are so large, and the prices have been so high, that there may be difficulty in disposing of the wool. In the cotton market there has been a greater amount of strength insofar as the details of supply and demand are concerned. There is no justification at all for higher prices for raw material. The exports are at least 250,000 bales less than they were at the corresponding period one year ago, and a more or less similar condition is noted for the stocks in warehouses.

The Iron Age—The pig iron production of 1918 was 38,506,249 tons. The December output was 3,433,617 tons, or 110,762 tons daily, and thus at an annual rate of 40,428,000 tons, but there were five months of last year in which a higher rate was maintained. The momentum of war effort is responsible in part, for December, 1918, exceeded the existing December record, that of 1915, by 7429 tons a day. The severe winter of 1917-1918 cut down the year's total. The November daily average make was 111,802 tons. The pig iron output of 1917 was 38,185,981 tons and of 1916, 39,039,356 tons. The rate of production on Jan. 1, however, was 109,675 tons per day, against 111,330 tons on Dec. 1. In the month 11 furnaces came in, but 21 went out and the number in blast on Jan. 1 was 350, or ten less than on Dec. 1.

Dry Goods Economist—The difficulty experienced by the Government in selling wool at the price it desires to realize, together with the removal of all restrictions on the importation of wool, points strongly to lower figures for this important raw material. Raw cotton has shown considerable fluctuation, but within a narrow range. Within a brief period the future course of the market will depend largely on acreage reports and new crop prospects, as well as on the development of the export situation. The latter has so far proved disappointing to those who figured on higher prices.

Bradstreet's—Trade at wholesale and with jobbers ranges fro monly fair to distinctly quiet, most animation being visible in the west and south, and most marked hesitation being noted at the large eastern centers close to large primary production. Industry is even quieter than in preceding weeks, with a greater percentage of capacity idle awaiting the readjusting process, which moves but slowly. Where readjustments have been completed as in a few lines, activity is being resumed guardedly. Of the three great departments of business activity, retail trade shows relatively most animation, due to clearance sales, which are extensively advertised, though decidedly colder weather overspreading the country has given a long-needed stimulus to final distribution of winter-wear goods.

Atlantic Seaboard

BOSTON

No inquiry. Railroads cutting fuel receipts. Problem to place few remaining steamers. Smokeless mines embargoed. Conferences between representatives of different Hampton Roads interests. All-rail movement slopes off again. Several shippers content to wait developments. Surplus of better grades at the New York piers. Anthracite receipts improve, although cold snap and tie-up in New York cause uneasiness. Restrictions off on broken and pea as well as egg. Local regulations off in Boston except as to price.

Bituminous—A thorough first-of-the-year canvass of the market discloses no buying interest whatever. A few scattering sales are made of high grade coal, but these are confined to retail dealers who now and then find outlet for a few cars. Coal at destination, however, particularly in cases where originally confined to some industrial, is next to impossible to dispose of. There have been a good many instances where coal requisitions filed through Government channels last summer have been taken out of pigeon holes by sundry operators and shipped regardless. There is practically no way of checking this until cars reach the consignees, and what remains of the New England Fuel Administration is kept busy with such cases. In Connecticut so little market is apparent that cars have been allowed to remain on sidings for weeks at a time and then turned over to the railroad for disposition. A more hopeless looking market at this writing would be hard to find.

The railroads that are usually the mainstay when such situations develop not only ceased buying but are declining to receive fuel coal on contracts. General traffic is so very light and the winter relatively mild that several thousand tons less every day are being used than a year ago, and it is only natural that with all the money invested in high-priced water coal during the season that the managements should now cut off shipments by water before those all-rail. This has been done quite generally the past fortnight. Shippers who have made continuous deliveries by steamer over long terms of years are now withholding deliveries. The result is that little coal is loading for New England at either Baltimore or Hampton Roads. Receipts of provincial coal from Cape Breton have also practically ceased.

More and more steamers are being tied up from week to week. Boats that were assigned on contract business in place of modern colliers owned here that were taken several months ago for overseas transport are many of them on the shippers' hands, and strenuous efforts are made to place them with the agencies who still have orders in hand. It should be noted that most of these ships are not on the regular Shipping Board terms, calling for $3.25, Hampton Roads to Boston, but that private arrangements were entered into based upon the cost of service by the boats that were commandeered. The Shipping Board has been looked to for some statement of policy, but the impression here is that nothing can be definitely decided until some understanding can be reached with the owners of foreign tonnage.

Because of the great surplus of coal at Hampton Roads over vessels entered to load two or three of the railroads have declared embargoes against tidewater movement and coal is not now reaching the piers in such heavy volume. At the present rate, however, it will take time to clear up the coal now waiting at the three piers.

The Boston trade is much interested and pleased to hear of the recent appointment of W. B. Calkins to be engineer-in-chief of the Tidewater Coal Exchange. Mr. Calkins has won a high place for himself for his thorough knowledge of coals and their origin, and his splendid work as chief inspector for the central Pennsylvania district since last spring does him great credit.

It is still extremely difficult to place coal arriving by water. All reports agree as to the extremely large reserve stocks everywhere in this territory, and where mill output has declined so the past 60 days the time is set farther and farther ahead when any active interest in the steam coal market can be anticipated. This state of things is decidedly awkward for the Pocahontas and New River agencies who want to be in favorable position with their operators this coming year. There are some hopes built upon the export and bunker trade, but on analysis that branch of the business is not so encouraging as might be supposed. At most points the differential is in favor of Welsh grades and the extent to which miners in Great Britain are returning to work it is fair to suppose that certain markets in South America will not be obliged to appeal to this country for their supplies. All of these questions are being discussed from time to time by the different Hampton Roads interests, and out of all the conferring it is hoped some sort of program will be laid down.

Once again the daily movement of bituminous all-rail has shown a falling off. This partly because of the railroads and their reduced consumption, but it is also due to cancellations being made by industrial plants all over the territory. There has been a lot of change in this respect since Dec. 1, and undoubtedly the mild temperature has had its effect. Then, too, a good many plants with Government contracts were rather expecting they would be permitted to keep up full operations until more goods could be accumulated. The Government, however, has made it clear that no consideration of the sort is to be shown, and many of the textile mills of Fall River and New Bedford have had to shut down for a day at a time because finished products are practically impossible to place and it would be a doubtful policy to continue heavy borrowing of money to keep plants in operation.

Meanwhile, a number of the Pennsylvania shippers are taking on what few orders they are able to pick up for spot shipment, and those who have first quality on their side feel optimistic over price developments when the restrictions are removed. Doubtless it will mean that a number of producers of inferior coal will simply have to close down for lack of orders. The market here, when it opens, is bound to be very discriminating.

At the New York piers there was such congestion, even of the better grades, that certain of the pools were embargoed. This applied mostly to mines in central Pennsylvania and in the Somerset regions. In territory adjacent to Long Island Sound trade is extremely dull. Stories are told of the great difficulty coal factors have in placing coal throughout Connecticut.

Anthracite—Receipts of domestic sizes continue to improve. The dealers are in fairly comfortable position, although price considerations and the uncertainty of demand the next three months lead them to be sparing in their arrangements for future deliveries. The result is that a cold snap like the present causes some uneasiness among retailers. They are apprehensive over the tie-up in New York and the fact that the same cold weather is likely to diminish the supply of stove and chestnut for New England. Those sizes are still in short supply and only a relatively small proportion is alloted to each cargo. Regulations as to broken and pea are now removed, but the demand from gas companies and from industrial plants is nothing like what might have been supposed. A very limited inquiry has developed for barley, but this is only spasmodic, for the steam situation in general would not permit heavy shipment of anthracite screenings.

The trade here is encouraged by reports that the movement of Philadelphia & Reading barges will soon be restored to Port Richmond, Philadelphia. Ample car storage, trackage and terminal facilities have been allowed to lie almost idle for months because of a fancy on the part of somebody in the Railroad Administration that Port Reading loading would very much increase the efficiency of tugs and barges. The distance is less, but every other element in the situation at port Reading contributes to long and expensive delay.

NEW YORK

Strike of marine workers has little effect on coal situation. Coal in retail dealers' yards sufficient for two weeks. Demand slow and "independent" product hard to move. Restrictions removed from egg. Bituminous market uneasy. Plenty of coal and manufacturers defer buying.

Anthracite—That New York is a "weather market" has been well demonstrated within the past week, as demand picked up slightly while the inhabitants shivered and fell off rapidly as soon as the weather moderated. The three-day strike of the marine workers had very little effect either one way or the other. Although no coal came from the loading docks, the retail dealers did not worry, most of them having plenty of coal in their yards for several days and some of them for two weeks. Their customers are also well prepared for the cold days.

The strike of the boatmen had its benefits, as well as its dangers for the coalmen. Some believe it proved to be the salvation of the shipper and dealer handling "independent" coal. The market was feeling groggy from the surplus coal on hand, and with dealers refusing shipments, fear was entertained that concessions would soon follow if any of the domestic sizes were to be moved. With the strike continuing a few days, agents and shippers predicted that the mines would have to suspend operations because of the embargoes placed on shipments, and that in the meantime the drain on the retail dealers would result in supplies being reduced so much that when the traffic on the bay and rivers was resumed demand would be urgent enough to take care of the coal at the docks at current prices.

For four days no coal was shipped from the railroad docks, but there was no anxiety on the part of the dealers who realized that the strikers would return to work before the coal supply had dwindled sufficiently to cause any fear of a coal famine.

Following a few weeks of inactivity and the refusal of dealers to accept shipments of "independent" coal when they were willing to depend upon shipments of "company" product, which they can purchase for 75c. per ton less than they are quoted for "independent" product, there was plenty of the domestic sizes available. This was not only true of "independent" product, but also of "company" product. Salesmen were sent out to arouse the dealers to the advisability of keeping their bins filled so as to guard against bad transportation problems, but they met with little success, many dealers preferring to take a chance rather than fill up on high-priced coal. Dealers are now counting the weeks and not the months before the winter will be practically over and the possibility of being able to make purchases below the current schedule.

This market may be relieved of much surplus coal now that restrictions as to shipments of egg, pea and smaller sizes have been removed and that these coals can now be shipped to such markets as may be found for them. The restrictions on anthracite shipments now apply only to stove and chestnut.

The steam coal situation is quiet. There is no movement and a rapid accumulation of the various sizes has followed. Individual shippers have met with some difficulty in moving their holdings and heavy concessions have been heard of.

Reports show that for the week ended Jan. 10 there were 5627 cars of anthracite dumped at the local docks as compared with 5546 cars the previous week, an increase of 81 cars.

Retail prices of coal in Manhattan and The Bronx advanced on an average 25c. per ton this week, as the result of the increase in wages of $6 per week and a nine-hour day secured by the drivers, yardmen and engineers of the dealers. This was followed by an increase in gross margins allowed the dealers by the Fuel Administration.

Bituminous—The bituminous situation continues dull. There is no demand and manufacturers and other large consumers are using their reserve stocks. Fortunately the market feels the after-effects of the holiday season, and production will not resume its normal pace until the middle of January, when the Church days following the Christmas holidays will be over.

Frequent labor troubles, besides the disinterestedness of workmen, interfere with mining operations; but under existing conditions the loss resulting has not caused any alarm because of the lack of coal. The result has been just the opposite. The

trade feels that the market is in better shape today than it would have been if production had kept up, and that instead of there being an entirely upset situation as regards prices the conditions are at least satisfactory, even though concessions for the cheaper grades are heard.

The only fear expressed at the danger of a prolonged strike of the marine workers was the shortage of fuel by the various traction and lighting companies, but the return of the men to work on Sunday obviated any curtailment of power supply, arrangements having been made for shutting off the heat in the cars of the traction companies.

The accumulation of stocks at the piers had become such that embargoes were placed against most of them. Fear that prices on the cheaper grades might be shattered by an over-supply of coal was not entirely removed by the stopping of shipments from the docks, but shippers early this week expressed the hope that demand might increase sufficiently to take care of much of the surplus.

Consumers are becoming more particular as to the quality of the coal delivered to them, and this accounts in great part for the present supply of the cheaper grades. The open season has been favorable to consumers and the demand between now and Apr. 1 is not expected to be favorable for heavy selling especially when it is believed that Dr. Garfield wil remove the price restrictions shortly. The demand for high grade coals continues to be greater than the supply. The change in bunker rules has had little visible effect on the situation.

The local dumpings of bituminous coal reported for the week ending Jan. 10 were 4996 cars as compared with 5451 cars the previous week, a decrease of 455 cars.

PHILADELPHIA

Anthracite market inclines to dragginess despite colder weather. Dealers advertise for business. Pea consumption below normal. Egg now allowed to be sold in any market. Stove and nut active. Spring outlook unpromising. Steam prices weak, with some price shading. Bituminous shows little change. High-grade coals scarce; others plentiful. Little buying.

Anthracite—It is growing more apparent each day that this market must have a continued cold spell to brace up the coal business. A light snow and a few comparatively cold days made some improvement and really kept the market together for a week longer, but failed to effect any permanent change. The indications are that dullness will once more overtake the dealers.

Numerous advertisements in the newspapers show the dealers need orders, but there are many in the trade who disapprove of advertising the fact. One of the largest retail companies by this means endeavored to acquaint the people with the fact that there would be an actual shortage if real cold conditions should arrive, as this market could only depend upon the tonnage alloted to it. It is believed this statement was only made to put the company on record in case the unexpected does happen, for the people certainly are not buying any more freely. It is also argued that with the present high prices the consumers will not buy until they actually need coal, especially if they are led to believe there is no scarcity and that they can obtain a supply on short notice.

It is not to be supposed that business is to remain dull until spring, as the winter is only young as yet; and if there should be an unusual snowfall or severely cold snap there would in all probability be a sudden demand, with many people all wanting coal at the same time. If instead of soliciting business now the dealer would allow the market to appear stronger, the householders would be more likely to buy gradually. It appears now that business is better with the suburban retailers, and it is a fact that their supplies are shorter.

The trade of the individual operators appears to be well cared for, while that of the big companies is more or less short of certain sizes. It is strange how the demand for pea coal has fallen off. Dealers report that their sales of this size are far below other years, but that the demand for chestnut has increased proportionately. Pea is free with most shippers and chestnut short with practically all. This market has always demanded an enormous tonnage of pea coal (which has been termed the poor man's fuel) for domestic use. It may be that with more money to spend the poorer class bought chestnut and find it more economical, and as the difference in price is less than $2 per ton, will continue to do so.

Egg coal is easy and no dealer can be found who is short of it. That it was becoming a problem to move is shown in the recent action of the United States Fuel Administration in removing all restrictions on it but price, even to the states barred since last spring from receiving any domestic sizes. No one will be at all surprised if the same action is taken on pea coal before the end of the month. It looks from this that the Fuel Administration is inclined to follow the line of least resistance, and as the season approaches we expect to see them remove the restrictions on one size after another, and then, as a final act before their retirement, cancel the regulations as to prices.

Stove and chestnut continue to have the call. While stove does not display the same strength as chestnut, still there is a most active demand for both sizes, for the reason that the stocks of these sizes are low in all yards.

The individual operators are not showing much concern as to how they can continue to market their product at their premium prices. No evidence of their cutting on the domestic sizes is obtainable, and it has probably not reached that stage as yet. They are hoping for weather that will carry them through until spring, for beyond that time no one will hazard a guess as to what conditions will be. Even the dealers are inclined to be pessimistic as to conditions after March, and there is a great deal of thought and discussion upon the subject. They feel at that time they will be unable to persuade a public that is tired of the coal question to purchase their winter's supply of coal in he spring and summer at a nominal reduction from the present circular. It is also being pointed out that any radical reduction in rates will surely bring on trouble with labor.

We have this week talked with some of the representatives of the largest mining interests, both company and individual, also with the most successful retailers of the city, and it is a fact that might as well be admitted that they all predict the dullest summer in the history of the trade. On the part of the operators it will be no surprise if they close down their mines and make repairs which have been neglected for the past two years.

We also gather that probably the Fuel Administration was never so popular as now, and that all hands would welcome a positive announcement that it will continue to dominate the coal trade until Apr. 1. Of course, this is because there would be no telling what would happen to prices if the business were suddenly returned to its old competitive basis.

As a matter of record we quote the delivered prices of the largest retail concern: Broken, $11.20; egg, $10.80; stove, $11.05; chestnut, $11.15, and pea, $9.45.

The steam sizes are in bad shape. All the trade seems to be trying to sell buckwheat. It can be bought from individuals at company circular and has been offered at 25c. less. The smaller sizes are comparatively weak.

Bituminous—The demand is still centered on the best grades of fuel, with the supply far from equal to the call. Industrial consumers are almost indifferent to taking any further supplies so long as they have such heavy stocks ahead and often stored in the most out of the way places, which they want to clean up before adding to their holdings. In addition these piles are on fire on account of having been stored too deeply.

Of course, those concerns requiring high grade fuels are actively in the market for more coal, but owing to the railroads continuing to take heavy tonnages, together with the shipments needed at tide for bunkering, it is very difficult to meet the demand on these grades. On the other hand the market is full of ordinary grades, and while salesmen are making many calls, they are meeting with but the slightest success in moving the coal.

BALTIMORE

The local market is flooded with coal, much of good grade, and takings fail to absorb. Embargoes declared against piers and some line points stopped. Prices break. Hard coal is plentiful also.

Bituminous—Coal is plentiful in the Baltimore district. The piers became so jammed several days ago that embargoes were placed by the railroads in an effort to clean up. At Curtis Bay, in order to release some of the rolling stock, coal was dumped by the rights-of-way in some cases. Line points for the most part were blocked also. Refusal to receive more coal was noted in numerous sections. Not only is it hard for the moment to dispose of immediate coal here, even though much better grades are now offering freely, but few industries will talk futures.

The representatives of numerous mines are now in the field for new connections. In such a market it is but natural that there has been at least a temporary break in prices, and coal is offering cheaper than for many months. As soon as business is shaken back to near-normal, however, the trade expects to see good coals all absorbed readily at fair prices. There is little thought that there can be anything like a permanent price for better coals much below the Government maximum, in view of the greatly increased overhead charges. Industries here report being pretty well stocked up by reason of the fact that their reserve depletion has not been so rapid on the present after-peace reconstructive basis.

Anthracite—The Maryland Fuel Administration has made the announcement that it has removed all restrictions on delivery of domestic coal. It warns, however, that there must be no move to raise prices above those last established by the Government agency. The move leaves the trade absolutely free as a whole to carry out the plan which had already been started by a part of the dealers to deliver the full third remaining undelivered on household orders. This at least where the consumers will accept the coal in full or in part, the mild winter and conservation moves having cut down the usual total consumption figures for the fall and early winter.

All sizes, with the exception of nut, are in liberal run, and pea and buckwheat are in too plentiful supply most of the time. With the return of supplies at times beyond their order needs of the moment the dealers here are hustling not only to get back old customers, but in many cases to hold those they picked up under coal famine conditions where regular dealer-connections could not supply even old-line customers. In this connection the Baltimore Retail Coal Exchange has issued an appeal to both dealers and the public to resume old relations of business as the fairest course. In many cases this will not be done, however.

Lake Markets

PITTSBURGH

Production adequate. Standard grades bring full price. Steel industry demands decreasing sharply.

Coal production in the Pittsburgh district last week was interfered with by celebration of the Greek Church Christmas, with its calendar 13 days behind the Gregorian, but the curtailment in production was not felt, as supplies are in general proving adequate to requirements.

The last of the coal allocations disappeared Thursday of last week, when those in favor of the Pennsylvania R.R. were rescinded by R. W. Gardiner, distributor for the district. The maximum taken for the railroad in a week during the period of control was 1152 cars. The movement now drops to normal proportions, and the railroad will get about 500 cars a week from the district.

Pittsburgh district steam coal has been fairly plentiful in the past two or three weeks, and there has been no decided change in the situation. Gas coal has continued decidedly scarce and consumers are kept busy securing sufficient coal for their requirements. Brokers report that in many cases they are still able to collect their full brokerage, beyond the set price, in the case of gas coal. Steam coal they are generally able to sell at the set price, securing a margin from the producer. On some off-grade coals there is shading, but in general standard grade Pittsburgh coal is bringing the full Government limit, frequently with brokerages in addition in the case of gas coal.

On account of the rather rapid slowing down in steel mill operations, which hardly began until this month, the demand for gas coal is likely to experience a great decrease, although public service companies will of course want as much as ever. Production of steel in December was actually at a greater rate than in November, but within a few weeks steel mill operations are likely to be at less than 60 per cent. of capacity, and perhaps at less than 50 per cent.

The market remains quotable at Government limits for standard grades: Slack, $2.10; mine-run, $2.35; screened, $2.60, per net ton at mine, Pittsburgh district.

TORONTO

Business conditions back to normal. Plentiful supplies of all grades on hand. Shipments arriving promptly. Bituminous market continues quiet.

Business shows increased activity with the setting in of colder weather, and conditions are now practically back to normal.

There are abundant supplies of all grades of coal on hand to meet present demands, which are somewhat lighter than usual at this season on account of the great majority of consumers having laid in their supply. Shipments from the mines are received promptly, as there have so far been no transportation difficulties. The prices fixed by the government are well maintained, excepting that some brokers having large supplies of bituminous for which there is little demand are ready to make sacrifices to effect sales.

BUFFALO

World of bituminous coal. Consumers do not want it. Take long time to use up the surplus. Anthracite becoming more plentiful. Everything dull.

Bituminous—So odd that the world could be filled with coal before anybody knew it. It was all along declared that the shortage was going to be worse than ever before, and then, suddenly the deluge. Shippers say that it will be midsummer before the present surplus is gone, unless the production is cut down materially. That a heavy reduction of output is next to impossible is realized by everyone, so the prospect is for very dull trade. It is that already, so that the only hope is to hold the price where it is now. Operators say that they are not making profit enough to enable them to stand a serious reduction of the price.

Jobbers are doing a small business and feel themselves lucky if they are not loaded up with coal in Canada that they cannot sell. The chance of making a double profit there was so alluring that all but the few wary ones have been spending much time lately trying to get rid of the coal they shipped there. As fast as they are able they are giving up their Canadian offices and drawing out of that trade, for they see no activity in it for a long time ahead.

There has been some railroad stagnation, due to the slow absorption of the coal sent out from the mines, but the complaints on that score are not so great as they were. At the same time the railroads are not buying liberally, and most of them are refusing to help a shipper out where he has cars on track that have been shipped wrong or refused by the consignee. It does not look as if the trade was going to change for the better right away. An increased dullness and stagnation appears to be the rule. The operators are casting about and holding meetings to find a way of reducing production, for that seems to be the only way out.

Anthracite—The supply is adequate. After that there is little to say. The city is not yet able to understand how it came about in so short a time. It had been promised by the coal authorities, but the consumers were afraid that the territory to be covered would turn out to be so great that it would be a long time before everybody was satisfied. The supply was so large, though, that no complaint was heard from the time the lakes closed.

The prospect now is for a sufficient supply right along. Members of the trade see no reason for further shortage, even if the natural gas gives out, as it has to a great extent already. The plan is to cut out the gas from large consuming plants and turn it over to families that have no other means of heating. The fuel administration has reduced the price of gas-retort coke a few cents, but keeps up the price of anthracite, though the independent anthracite operators are already finding it difficult to sell their coal at full prices.

CLEVELAND

What No. 8 operators term "strong arm" methods of the railroads to batter down the price of railroad fuel has aroused much criticism and a determination to protest to Washington. Steam coal demand, while far from heavy, shows signs of improving; and with the mines still off because of the holidays, overproduction has been less noticeable of late.

Bituminous—Vigorous protest is to be made to Washington heads of the Railroad Administration against the attempts of Ohio carriers to break down Government maximums. Operators are not so averse to making a concession of 10 or 20c. a ton to the railroads as they are to helping insert a wedge that is bound to bring about reduced prices all along the line. In some instances railroads have gone a step farther than to inquire concerning a concession, and this has prompted some caustic criticism. Some was voiced at a recent meeting of Ohio operators at Cleveland, when, among other things, John Moore, president of the Ohio Mine Workers, declared that the mine workers will not stand for a cut in their scale; and operators were firm in their conviction prices cannot be reduced unless railroad rates or wages are reduced.

Real winter weather has arrived at last, and this has increased, probably by one-third, the domestic demand for bituminous. More and more buying has been done by steam-coal users, although they have been attempting to satisfy urgent requirements only but the time draws nearer and nearer when considerable buying will become imperative. Except over the holidays, when inventory was taken, few industries in northern Ohio have suffered greatly from a lack of market, and stock piles have melted a great deal faster than expected.

The matter of price continues to open the doors to many statements, but Government prices seem to be holding with surprising strength. Many small domestic dealers are selling stripping coal at quite reduced prices, and a fair amount of standard No. 8 coal is going to steam coal buyers, quietly of course, under the maximum. If prices do not break before lake coal again is sold, operators believe they will have been tided over the worst. Indeed, from the standpoint of both demand and price, many operators believe steady improvement is bound to set in from the middle of January on.

Car supply accorded members of the Pittsburgh Vein Operators' Association of Ohio in December averages 78.20 per cent. as against 79.65 per cent. in November. In December lost production, due mainly to car shortage, amounted to 322,900 tons; in November it was 341,550 tons. For the week ending Dec. 31 the car shortage averaged 23.86 per cent. and lost production was 59,700 tons. Shipments by members of the association amounted to 3368 cars in the week ending Dec. 31. The week previous shipments were 4195 cars.

Anthracite—Receipts are now the largest of the season, and are growing larger from week to week. Anthracite is not at all plentiful, but for the first time in practically a year retailers are advertising they have an ample supply.

Lake Trade—The steamer "Edwin N. Ohl," of the Becker fleet, Cleveland, has loaded the first lake cargo of 1919. At Ashtabula she took on a load that was mainly coal in transit on a lake shipper's account when the 1918 season ended. Reports from the upper lakes are to the effect coal is moving off the docks very slowly, and dock piles in the spring are likely to be larger than in the spring of 1918 or 1917. This may cut the 1919 lake movement to as low as 26,000,000 tons, some lake shippers fear.

DETROIT

Because of heavy stocks in the local market, Detroit jobbers and wholesalers find it difficult to interest buyers in bituminous coal for either steam or domestic use.

Bituminous—Jobbers and wholesalers operating in the Detroit market say that disappointing lack of success attends their efforts to interest either the users of steam coal or the retail dealers in their offerings. The volume of business is described as far short of normal, though figures are apparently unavailable to show the exact disparity compared with previous years.

The reason for the aloofness of buyers is found by the jobbers in the presence of large stocks of bituminous in the reserves of steam-coal users and the stock piles of the retailers. In many cases the heavy supplies are occasioning unrest to the possessors as well as serving as a check on business. Jobbers hear that the manufacturing plants are having considerable trouble with their fuel, because a large part of it consists of a poor quality of coal that was sent into Detroit a few weeks ago to replace stock of a better grade that had been zoned out of the city.

The heavily stocked retailers also are suffering much anxiety. They too have a lot of the low-grade coal in stock, and some of them are holding a considerable amount of mine-run and slack, which was bought when the Fuel Administration, giving warning of a probable shortage, advised the purchase of any form of coal that could be obtained. Because of the high temperatures that have so far prevailed, retailers have found their customers dilatory in placing orders. The fact that coal of better grade, in lump and other sizes better suited for household use, is now coming into the market freely does not tend to brighten the outlook for the retailers, who face the possibility of finding a large part of their stock still on hand when spring comes.

Anthracite—Moderate temperatures have afforded opportunity for domestic consumers to use anthracite sparingly, with the result that supplies are better than anticipated. There remains, however, a large potential demand, which cold weather would stimulate and which would speedily clear the market of the anthracite on hand. The situation created by the deficient supply of anthracite has been greatly improved from the viewpoint of the domestic consumer by a large increase in the supply of coke and by a reduction of $1 a ton in coke prices, ordered by the state fuel administrator.

COLUMBUS

The colder weather of the past ten days has stimulated the retail trade. Steam business is still slow, and little tonnage is moving. Some price cutting, especially in steam grades, is reported. Considerable West Virginia coal is arriving in the local market.

The feature of the coal trade in Ohio has been the larger volume of West Virginia coal arriving, which has the effect of reducing the movement of Ohio-mined varieties. The West Virginia shippers are cutting quotations below the Government figures. This has not yet demoralized the market, as the larger Ohio operators are holding firm, preferring to shut down rather than shade quotations. This applies more particularly to steam grades, although there is a large amount of domestic sizes arriving from West Virginia.

The lower temperatures have stimulated the retail trade and dealers generally are now busy making deliveries. Retail stocks are still pretty large, and the activity induced by colder weather has not been reflected on the operating and distributing ends of the business to any extent. Consumers are asking for the fancy grades such as Pocahontas and splints. Retail prices are generally well upheld and little cutting is reported. Hocking lump sells at $5.75 and other grades at corresponding levels. Householders generally have larger stocks than ever before, and consequently the rush because of the cold wave is not so pronounced as in past seasons. Anthracite is practically out of the market and there is little domestic coke to be had.

The steam business is slow and reports indicate large stocks in the hands of consumers. Purchasing agents for manufacturing plants are not disposed to buy under present unsettled circumstances. The policy followed is to use up surplus stocks before buying more. Public utilities are well supplied, and the same is true of public institutions. The Michigan market is still overstocked and little relief is expected in that quarter.

Production is now to a low point, principally because of lack of orders. Some car shortages is also affecting the output in certain districts. It is estimated that the production in the Hocking Valley district has been about 40 per cent. and in Pomeroy Bend about the same. Eastern Ohio has had a fair run, with about 50 per cent. production.

LOUISVILLE

Colder weather improves domestic demand slightly, and demand from small heating plants. General steam demand sluggish. Low grades hard to sell at any price.

Slightly colder weather has resulted in some small improvement in demand for small lots of domestic, but domestic consumers are so thoroughly stocked that very little demand is looked forward to until the latter part of February. Zero weather has not been experienced as yet, and consumption for the fall and winter to date has been considerably under normal.

The local steam demand is practically nil, as industrial concerns are using up stocks on hand, which were stored last summer or fall. They are not buying until present stocks are cleaned up, when they expect to enter on a competitive market basis. Neither mine-run nor nut and slack is in any demand, and fine screenings are dull.

Many mines throughout the field are down at the present time and have little expectation of resuming until they can dispose of coal on board cars and secure additional orders. Wagon mines are rapidly dropping out of competition, as the big selling organizations are scouring the market so thoroughly, and have so much coal to dispose of that there is no room for the wagon mine.

Labor and car supply are showing a general surplus all over the state at the present time. Mines are having no trouble in getting all the labor desired, in spite of layoffs, as there is not the heavy demand previously experienced, and the closing of wagon mines is helping the situation.

River coal shipments during the past few days have been small, as the Licking, Big Sandy and Ohio, as well as other rivers, have been at flood stage, too high in fact for successful handling of tows due to heavy current. For a time it was thought that mine operations would be interfered with. Some railroads were under water, but a

freeze checked the rise and no danger is now feared.

The market as a whole is firm, with few reports of price cutting of any moment: The big operators are endeavoring to hold up prices, and locally the retailers are working nicely.

BIRMINGHAM

Severe weather conditions and shortage of supply create strenuous demand for lump coal. Steam also in good demand from all classes of consumers. Mine workers slowly returning to work and production far below normal.

The local market is experiencing the strongest demand for domestic coal in the ten months. There is scarcely any coal in any of the yards in this district, and brokers and distributers are being besieged with requests for more liberal shipments, while consumers are camping on the trail of the dealers. A survey of the yards in old Birmingham last Saturday showed a total of less than 300 tons of domestic coal on hand. The severe weather of the past few days, when the thermometer registered uncomfortably close to zero, found many of the poorer classes and some of the better element without coal and able to secure only a nominal amount, if any at all. Cities and towns throughout the state are without any stocks.

Inquiry for steam coal is also good and in excess of the production at this time. The demand is general, railroads, mills, industrial plants and public utilities being the most urgent buyers. Some Illinois coal has been diverted to the Mobile trade during the past week.

The output at the mines is only about 50 to 75 per cent. normal, and the situation is improving very slowly. There is still some sickness in the camps, but this is responsible in only a small way for the shortage of labor and the irregularity of the men in reporting for work. The weather conditions of the past week had a very disastrous effect on coal production, accentuating the labor shortage and crippling the machinery at the operations. The output for the week ending Dec. 28 was the lowest yet recorded by the Government representative here, being 109,179 net tons.

Coke

CONNELLSVILLE

Coke supplies increased but market still steady. Labor performance improved.

An easier tone pervades the whole coke situation, as production is showing an increasing tendency, with better labor performance, and the blast furnace requirements are tending to decrease. The Fuel Administration's control of prices continues, and it is established that the control will continue to Feb. 1 and quite possibly until Apr. 1, the end of the coal year. It is understood that the Fuel Administration will give at least a fortnight's notice before relinquishing control. This advance notice has been urged by the blast furnace interests that have contracts requiring negotiation in case the Government price disappears. Other coke contracts provide that the Government price shall continue to the end of the contract in the event of the control being removed. Coke operators who have the latter form of contract regard its as favorable, but the operators who have contracts involving negotiation are satisfied with their form also. They maintain that if the open market should decline much below the Government level there would be difficulty in enforcing the $6 contracts, as furnaces would be disposed to blow out and the contracts would not operate, since they are simply "requirement" contracts.

Despite all the holidays, both the regular holidays, on the Gregorian calendar and the other holidays, 13 days later, on the Julian calendar, some coke operators report that their labor supply began to improve with the week beginning Dec. 23 and that conditions now are much more satisfactory than at any time since the beginning of the influenza epidemic. There are not only more men on an average each day, but they are more disposed to work, realizing that their jobs are no longer absolutely secure.

Practically no furnace coke is being offered on the open market, and probably but little would be absorbed if offered, unless at a cut price, as the furnaces are fairly well supplied. One stack resumed operations last week after being banked about two weeks. Offerings of foundry coke are of moderate volume, and sales are not altogether as readily effected as formerly, although there is no shading except to middlemen. The market remains quotable at the set limits: Furnace, $6; foundry, 72-hour selected, $7; crushed, over 3-in., $7.30 per net ton at oven. Screenings from old dumps sell with great difficulty, and $5.25 is the highest price obtainable, the Government limit having been $5.50.

The "Courier" reports production of coke in the Connellsville and Lower Connellsville region in the week ended Jan. 4 at 253,980 tons, an increase of 21,790 tons, and shipments of raw coal at 173,568 tons, an increase of 45,853 tons.

Buffalo—The demand is not so heavy as it was, but a recovery is looked for as soon as the manufacturing trade generally is adjusted; for the need of iron in the country is as great as it was and the supply is small and many staples are hard to get at all. On this account the lake vessel owners are looking for the same big flow of ore down the lakes next season as during the one just past, and at practically the same price and same rate of freight. Fuel coke is dull, even when it competes with anthracite, as it is used for the most part when anthracite is hard to get or where it can cut the price slightly.

Middle Western

GENERAL REVIEW

Cold weather stimulates demand for domestic coal. Steam coal users not purchasing. Question of prices now to the fore.

The Middle West has enjoyed for the last five or six days its first spell of really cold weather, the temperature in some instances going down as far as ten to sixteen degrees below zero. This change in the weather has not brought about any great activity in the market. It has, however, stimulated to some extent the purchasing of domestic coal, especially through Iowa, northern Illinois and Wisconsin. The purchasers of steam coal are continuing to hold themselves aloof from the market until such time as they adjust themselves to the new conditions, which they will have to face. In the meantime, they are not burning as much coal as usual on account of decrease in manufacturing, and they are even less interested than they were two or three weeks ago in purchasing any kind of steam coal.

The recent cold snap, however, has to some extent increased the purchasing of coal on the part of the railroads. We do not mean that they have gone into the market and placed new orders, but they have instructed various operators to forward coal a little more rapidly than heretofore on the orders they have already placed.

The price question in the Middle West is getting to be a more important one every day, and many conjectures are made as to what the probable future of this question will be. As a matter of comparison, take a coal from the Springfield district of Illinois and a coal from the Franklin County district of the same state. These two coals cost practically the same at the mines, and one is a vastly superior product to the other, for nearly all purposes, yet they sell for exactly the same price at the pit mouth. This state of affairs, under ordinary conditions, will not stand to reason, and as a result some change will have to be made. A man is not going to buy a cotton coat if he can buy a woolen one for the same price.

There has not been any radical change in market conditions in the past week, except perhaps the demand for steam coal has decreased, if such a thing is possible. The operators, furthermore, are not looking for any change until at least another month, or perhaps the first of April.

The labor question is being discussed with more and more frequency and seriousness as we approach the spring, and it is freely conjectured that this labor question will be a more and more important one, so far as the coal consuming public is concerned, before next April.

CHICAGO

Retail trade stimulated by cold weather. Anthracite situation clearing up.

The retailers in Chicago have been buying a little more coal than usual. The intense weather we have had for the last six days seems to have stimulated trade to a great extent, and they have been buying rather freely as a result.

The United States Fuel Administration at Washington recently made a ruling to the effect that Eastern domestic coal could be shipped to points in Chicago, or anywhere in Illinois, provided the dealer got a permit covering such shipment. This permit, according to the Fuel Administration orders, could be obtained from the State Fuel Administrator. Since this ruling was made known, a great many retailers applied to the State Administration, but were told that no permits had been granted, or would be granted for some time, as it was up to Illinois to reduce her own surplus storage coal before any of the higher grade Eastern product could be used.

The anthracite situation seems to be clearing up, as the average householder has no trouble now in having his order for more coal filled at his convenience.

ST. LOUIS

Warm weather prevails with no steam demand and a light domestic call. All sizes on all grades heavy. Prices gone to pieces. Country orders fair. First anthracite coming in.

A warm wave after a few days of cold weather maintains a condition that is hard to describe. The cold weather was of such short duration that it had no effect on prices. There was a noticeable movement over what was considered normal, but it faded away with the return of summer weather. The oldest coal man cannot remember a winter such as this. The winter of 1877-78 was a mild one, but nothing in comparison with the present.

There is a fair country business on domestic sizes. This is mostly for Carterville, although a fairly good tonnage of Mt. Olive is going out. The outside steam inquiries are light. Locally there is an overloaded steam market from all fields, and there is no prospect of relief in sight for steam. Even if cold weather comes there will be a greater production than the local market could absorb under the most strenuous condition, for the increased call for the larger sizes would be just twice what it is now, if not more.

The Standard field is in bad shape. Many mines are idle because they cannot move screenings, or it may be nut or egg at some other operation. There is apparently a surplus of all sizes when the entire field is considered.

Cars are not plentiful on the Illinois Central R. R., although the movement is fair. On other lines there is a good supply of equipment.

The Mt. Olive district is beginning to feel the effect of the weather. The mines are idle, and there is a general slowing up, with plenty of unbilled coal on track. There is, however, a good movement from this field into country districts, and Chicago and the north continue to take liberally, everything considered. There is a light movement of Standard north, with most of it going to Chicago.

The Carterville and Du Quoin fields are faring very much alike. There is a surplus of coal, even though the railroads are taking liberally on their contracts. Domestic orders get prompt shipment now, and the steam demand is about equal to the supply. There is a marked preference shown for the mines that do not assess a preparation charge for a doubtful preparation. The buyer in this market feels that the coal is no better prepared than in pre-war times, and it had to be clean then to find a market. The opinion is that the Administration permitted itself to be subjected to a strangle-hold and had this jammed down as a sop to a certain class whose patriotic spirit resembled a love of dollars more than a love of country.

The Williamson County field is shipping heavily to the south, but the St. Louis tonnage from Williamson and Franklin County, as well as Du Quoin, are light. There is a good storage supply of this in St. Louis.

Little Arkansas moving in and those who have it in storage are going to take a loss of at least $1.50 per ton. This because on Jan. 7 the ban on anthracite egg for St. Louis and the west was lifted, and about 100 cars were ordered, all that was available then. The mine price on about half was $5.22 net, and a dollar more on the remainder. With the freight of $5 gross this made a St. Louis price of $9.70 and $10.70; adding a $2.50 gross margin for the retailer makes it $11.35 and $12.35 to the consumer. This size, when it ceased to move in last spring, was selling at $10.75.

The coming of anthracite shot the coke market all to pieces. Byproduct coke came down to $12.35 from $13. It will be hard to sell at that. The gas house market is slower, but is easy.

Standard prices on the market are: 2-in. screenings, $1.30 to $1.50; nut, $1.75 to $1.85; egg, $1.75 to $1.85; 2-in. lump, $1.60 to $1.75; 6-in. lump, $1.75 to $2.25. Mt. Olive is breaking slightly, although the big producers are standing pat. Carterville stays up pretty well to the Government maximum.

CURRENT PRICES—MATERIALS & SUPPLIES

IRON AND STEEL

PIG IRON—Quotations (compiled by The Matthew Addy Co.), are f.o.b. cities named, unless noted otherwise.

	Current	One Month Ago
CINCINNATI		
No. 2 Southern	$37.60	$37.60
Northern Basic	34.80	34.80
Southern Ohio No. 2	35.80	35.80
NEW YORK, Tidewater delivery		
Penna. 2X	39.55	39.15
Virginia No. 2	41.70	41.70
Southern No. 2	41.70	41.70
BIRMINGHAM		
No. 2 Foundry	34.00	34.00
PHILADELPHIA		
Eastern Pa. 2X	39.15*	39.15*
Virginia No. 2	40.50†	40.50†
Basic	36.90*	36.90*
Grey Forge	36.90*	36.90*
Bessemer	39.10*	39.10*
CHICAGO		
No. 2 Foundry Local	34.50	34.50
No. 2 Foundry Southern	39.00	39.00
PITTSBURGH, including freight charge from the Valley		
No. 2 Foundry Valley	35.40	35.40
Basic	34.40	34.40
Bessemer	36.60	36.60

*F.o.b. furnace. †Delivered

STRUCTURAL MATERIAL—The following are the base prices, f.o.b. mill, Pittsburgh, together with the quotations per 100 lb. from warehouses at the places named:

	Mill Pittsburgh	New York Current	New York One Year Ago	St. Louis	Chicago
Beams, 3 to 15 in.	$3.00	4.27	4.19	4.27	4.27
Channels, 3 to 15 in.	3.00	4.27	4.19	4.27	4.27
Angles, 3 to 6 in., ¼ in. thick.	3.00	4.27	4.19	4.27	4.27
Tees, 3 in. and larger	3.05	4.27	4.19	4.27	4.27
Plates	3.225	4.77	4.44½	4.52	4.52

BAR IRON—Prices in cents per pound at cities named are as follows:

Pittsburgh	St. Louis	Denver	Birmingham
3.50	4.50	4.85	4.47

NAILS—Prices per keg from warehouse in cities named:

	Mill Pittsburgh	St. Louis	Denver	Chicago	Birmingham	San Francisco	Dallas
Wire	$3.50	$4.37	$5.11	$4.37	$4.75	$5.35	$4.75
Cut	5.00	6.50	5.61	6.50	.....	5.75	.....

TRACK SUPPLIES—The following prices are base per 100 lb. f.o.b. Pittsburgh for carload lots, together with the warehouse prices at the places named:

	Pittsburgh	Cincinnati	Chicago	St. Louis	San Francisco	Birmingham	Denver
Standard railroad spikes ⅜-in. and larger	$3.70	$6.00	$4.50	$5.30	$6.15	$6.00	$5.55
Track bolts	4.90	8.90	5.50	Prem.	7.50	8.00	6.55
Standard section angle bars	....	....	4.45	Prem.	5.15	....	4.95

COLD DRAWN STEEL SHAFTING—From warehouse to consumers requiring fair-sized lots, the following discounts hold:

Cincinnati	Cleveland	Chicago	St. Louis	Denver	Birmingham
17½%	+7%	+9%	+15%	+30%	+30%

HORSE AND MULE SHOES—Warehouse prices per 100 lb. in cities named:

	Mill Pittsburgh	Cincinnati	Chicago	St. Louis	Denver	Birmingham
Straight	$6.25	$7.25	$6.50	$6.25	$8.00	$7.25
Assorted	6.40	7.75	6.50–7.00	6.40	8.25	7.50

Cincinnati—Horseshoe nails sell for $4.50 to $5 per 25-lb. box.

CAST-IRON PIPE—The following are prices per net ton for carload lots:

	New York Current	New York One Month Ago	New York One Year Ago	Chicago	St. Louis	San Francisco
4 in.	$70.70	$70.70	$59.50	$69.80	$63.00	$85.50
6 in. and over	67.70	67.70	56.50	66.80	60.00	82.50

Gas pipe and 16-ft. lengths are $1 per ton extra.

STEEL RAILS—The following quotations are per ton f.o.b. Pittsburgh and Chicago for carload or larger lots. For less than carload lots 5c. per 100 lb. is charged extra:

	Pittsburgh Current	Pittsburgh One Year Ago	Chicago Current	Chicago One Year Ago
Standard Bessemer rails	$57.00	$38.00	$67.00	$38.00
Standard openhearth rails	55.00	40.00	65.00	40.00
Light rails, 8 to 10 lb.	3.135 (100 lb.)	43.50	3.135 (100 lb.)	43.50
Light rails, 12 to 14 lb.	3.09 (100 lb.)	49.00	3.09 (100 lb.)	49.00
Light rails, 25 to 45 lb.	3.00 (100 lb.)	30.00	3.00 (100 lb.)	30.00

OLD MATERIAL—The prices following are per gross ton paid to dealers and producers in New York. In Chicago and St. Louis the quotations are per net ton and cover delivery at the buyer's works, including freight transfer charges:

	New York	Chicago	St. Louis
No. 1 railroad wrought	$28.30	$28.00	$33.00
Stove plate	30.21	21.00	25.50
No. 1 machinery cast	29.30	27.00	20.50
Machine shop turnings	13.14	13.00	18.50
Cast borings	13.14	14.00	18.50
Railroad malleable cast	24.25	26.00	32.00

COAL BIT STEEL—Warehouse price per pound is as follows:

New York	Cincinnati	Birmingham	St. Louis	Denver
$0.12	$0.16½	$0.18	$0.19	$0.18½

DRILL STEEL—Warehouse price per pound:

	New York	St. Louis	Birmingham
Solid	16c.	16c.	15c.
Hollow	24c.	...	...

PIPE—The following discounts are for carload lots f.o.b. Pittsburgh; basing card of Jan. 1, 1919 for steel pipe and for iron pipe:

BUTT WELD

Steel Inches	Steel Black	Steel Galvanized	Iron Inches	Iron Black	Iron Galvanized
⅛, ¼ and ⅜	47%	20%	⅛ to 1½	36%	20%
½	51%	36½%			
¾ to 3	54%	40½%			

LAP WELD

2	47%	34½%	2	29%	15%
2½ to 6	50%	37½%	2½ to 4	31%	18%

BUTT WELD, EXTRA STRONG PLAIN ENDS

⅛, ¼ and ⅜	43%	25½%	⅛ to 1½	36%	21%
½	48%	35½%			
¾ to 1½	52%	39½%			

LAP WELD, EXTRA STRONG PLAIN ENDS

2	45%	33½%	2	30%	17%
2½ to 4	48%	36½%	2½ to 4	32%	20%
4½ to 6	47%	35½%	4½ to 6	31%	19%

Stocks dicounts in cities named are as follows:

	New York Black	New York Galvanized	Cleveland Black	Cleveland Galvanized	Chicago Black	Chicago Malvanized
⅛ to 3 in. steel butt welded	40%	28%	43%	26%	41.1%	26.1%
3½ to 3 in. steel lap welded	36%	25%	39%	23%	37.1%	23.1%

Malleable fittings. Class B and C, from New York stock sell at list + 15%. Cast iron, standard sizes, 5% off.

WIRE ROPE—Discounts from list price on regular grades of bright and galvanized are as follows:

	New York and St. Louis
Galvanized iron rigging	+20%
Galvanized cast steel rigging	List
Bright plain rigging	30%
Bright cast steel	17½%
Bright iron and iron tiller	5%

STEEL SHEETS—The following are the prices in cents per pound from jobbers' warehouse at the cities named:

	Pittsburgh, Mill, in Carloads	New York Current	New York One Month Ago	New York One Year Ago	Cleveland Current	Cleveland One Year Ago	Chicago Current	Chicago One Year Ago
*No. 28 black	4.70	6.22	6.52	9.445	6.00	6.22	6.22	6.445
*No. 26 black	4.60	6.12	6.42	9.405	5.90	6.12	6.12	6.405
*Nos. 22 and 24 black	4.55	6.07	6.37	9.295	5.85	6.07	6.07	6.285
Nos. 18 and 20 black	4.50	6.02	6.32	9.245	5.80	6.02	6.02	6.245
No. 16 blue annealed	4.10	5.37	5.72	10.645	5.20	5.37	5.37	5.645
No. 14 blue annealed	4.00	5.27	5.62	10.545	5.12	5.27	5.27	5.545
No. 10 blue annealed	3.90	5.17	5.52	10.445	5.05	5.17	5.17	5.445
*No. 28 galvanized	6.05	7.57	7.77	11.695	7.25	7.57	7.57	7.695
*No. 26 galvanized	5.75	7.27	7.47	10.395	6.95	7.27	7.27	7.395
No. 24 galvanized	5.60	7.12	7.32	10.245	6.80	7.12	7.12	7.245

* For painted corrugated sheets add 30c. per 100 lb. for 25 to 28 gage; 25c. for 19 to 24 gages; for galvanized corrugated sheets add 5c., all gages.

SHOP SUPPLIES

NUTS—From warehouse at the places named, on fair sized orders, the following amount is deducted from list:

	New York Current	New York One Year Ago	Cleveland Current	Cleveland One Year Ago	Chicago Current	Chicago One Year Ago
Hot pressed square	$0.80	$1.00	$1.25	$1.40	$0.98	$1.05
Hot pressed hexagon	.80	1.00	1.05	14.0	.78	.85
Cold punched square	2.50*	1.00	.75	.75	1.00	1.50
Cold punched hexagon	2.50*	1.00	.75	.75	1.00	1.50

* List plus.

Semi-finished nuts sell at the following discounts from list price:

	Current	One Year Ago
New York	50—10%	40%
Chicago	50%	60%
Cleveland	50—10%	50%

MACHINE BOLTS—Warehouse discounts in the following cities:

	New York	Cleveland	Chicago
¾ by 4 in. and smaller	40—10%	40—10%	40%
Larger and longer up to 1 in. by 30 in.	20—5%	20—5%	25—5%

WASHERS—From warehouses at the places named the following amount is deducted from list price:

For wrought-iron washers:
New York, $2.00 Cleveland, $1.25 Chicago, $1.75

For cast-iron washers the base price per 100 lb. is as follows:
New York, $6.00 Cleveland, $4.25 Chicago, $4.50

RIVETS—The following quotations are allowed for fair sized orders from warehouse:

	New York	Cleveland	Chicago
Steel ⅜ and smaller	40%	45—5%	40%
Tinned	30%	45—5%	40%

Biloer, ¾, ⅞, 1 in. diameter by 2 in. to 5 in. sell as follows per 100 lb.:
New York, $5.675 Cleveland, $5.15 Chicago, $5.67 Pittsburgh, $4.65

Structural, same sizes:
New York, $5.775 Cleveland, $5.25 Chicago, $5.77 Pittsburgh, $4.75

CONSTRUCTION MATERIALS

LINSEED OIL—These prices are per gallon:

	New York		Cleveland		Chicago	
	Current	One Year Ago	Current	One Year Ago	Current	One Year Ago
Raw in barrel	$1.59	$1.28	$1.70	$1.30	$1.77	$1.26
5-gal. cans	1.84	1.38	2.00	1.40	1.97	1.35

* Nominal.

WHITE AND RED LEAD in 500-lb. lots sell as follows in cents per pound:

	Red				White	
	Current		1 Year Ago		Current	1 Year Ago
	Dry	In Oil	Dry	In Oil	Dry and In Oil	Dry and In Oil
100-lb. keg	14.00	14.50	12.25	12.50	14.00	12.50
25 and 50-lb. kegs	14.25	14.75	12.50	12.75	14.25	12.75
12½-lb. keg	14.50	15.00	12.75	13.00	14.50	13.00
5-lb. cans	.....	.....	14.25	14.00	16.00	14.50
1-lb. cans	.....	.....	14.25	14.50	17.00	14.50

COMMON BRICK—The prices per 1000 in cargo or carload lots are as follows:

Cincinnati	$16.75	Birmingham	$15.00
St. Louis, salmon	12.00	Denver	12.00

PREPARED ROOFINGS—Standard grade rubbered surface, complete with nails and cement, costs per square as follows in New York, St. Louis, Chicago and San Francisco.

	1-Ply		2-Ply		3-Ply	
	C.I.	L.C.I.	C.I.	L.C.I.	C.I.	L.C.I.
No. 1 grade	$1.35	$1.60	$1.70	$1.95	$2.05	$2.30
No. 2 grade	1.20	1.45	1.50	1.75	1.80	2.05

Asbestos asphalt saturated felt (14 lb. per square) costs $5.35 per 100 lb.

Slate-surfaced roofing (red and green) in rolls of 108 sq.ft. costs per $2.40 roll in carload lots and $2.65 for smaller quantities.

Shingles, red and green slate finish cost $5.75 per square in carloads, $6.75 in smaller quantities, in Philadelphia.

ROOFING MATERIAL—Prices per ton f. o. b. New York and Chicago:

	Carload Lots		Less Than Carload Lots	
	N. Y.	Chicago	N. Y.	Chicago
Tar felt (14 lb. per square of 100 sq.ft.)	$64.00	$57.00	$65.00	$58.00
Tar pitch (in 400-lb. bbl.)	21.00	18.00	22.00	19.00
Asphalt pitch (in barrels)	36.00	36.00	41.50	41.50
Asphalt felt	67.50	67.50	72.00	72.00

HOLLOW TILE—Price per block in carload lots for hollow building tile:

	4x12x12	8x12x12	12x12x12
St. Paul	$0.056	$0.11	$0.162
Cincinnati	.086	.165	.218
Seattle	.09	.175	.30
Los Angeles	.079	.144	.181
New Orleans	.14	.20	.29
Pittsburgh	.....	.14	...

LUMBER—Price of yellow pine per M in carload lots:

	1-in. Rough 10 In. x 16 Ft.	2-In. T. and G. 10 In. x 16 Ft.	8 x 8 In. x 20 Ft.
St. Louis	$38.25	$34.00	$36.00
Birmingham	33.00	33.00	28.50
Denver	43.25	35.00	43.00
Cincinnati	42.00	41.00	36.00

EXPLOSIVES—Price per pound of dynamite in small lots and price per 25-lb. keg for black powder:

	Low Freezing	Gelatin			Black
	20%	40%	60%	80%	Powder
New York	.....	$0.29½	$0.34½	.....	$2.50
Boston	$0.23½	.26½	.31½	$0.35½	2.50
Cincinnati	.10½	.22½	.26½	.....	2.45
Kansas City	.20½	.25½	.30½	.38½	2.55
New Orleans	.20½	.24½	.28½	.....	2.70
Seattle	.....	.25½	.32½	.....	.....
Chicago	.18½	.22½	.30	.36	2.45
St. Paul	.19	.24½	.30½	.....	2.55
St. Louis	.19	.25½	.30½	.36½	2.15
Denver	.17½	.24	.29	.35	2.50
Dallas	.21	.25	.29	.39	.....
Los Angeles	.23	.29	.37	.....	3.10

MISCELLANEOUS

GREASES—Prices are as follows in the following cities in cents per pound for barrel lots:

	Cincinnati	St. Louis	Birmingham	Denver
Cup	7	6.9	8½	14½
Fiber or sponge	8	13	8½	18
Transmission	7	13	0	20
Axle	4½	3.9	3¾	5¼
Gear	4½	9.5	8	9
Car journal	22 (gal.)	4.5	5	8

BABBITT METAL—Warehouse prices in cents per pound:

	New York		Cleveland		Chicago	
	Current	One Year Ago	Current	One Year Ago	Current	One Year Ago
Best grade	87.00	70.00	80.00	80.00	75.00	70.00
Commercial	42.00	40.00	21.50	21.50	15.00	25.00

HOSE—Following are prices of various classes of hose:

	Fire	
		50-Ft. Lengths
Underwriters' 2½-in		85c. per ft.
Common, 2½-in		25%

	Air		
	First Grade	Second Grade	Third Grade
¾-in. per ft	$0.65	$0.40	$0.30

Steam—Discounts from list
First grade, 15% Second grade, 25% Third grade, 33⅓%

LEATHER BELTING—Present discounts from list in cities named:

	Medium Grade	Heavy Grade
St. Louis	30–50%	35%
Denver	35–5%	40%
Birmingham	35%	40%
Chicago	45%	35%
Cincinnati	40–10%	30%

RAWHIDE LACING—25% off list.

PACKING—Prices per pound:

Rubber and duck for low-pressure steam	$0.99
Asbestos for high-pressure steam	1.76
Duck and rubber for piston packing	1.10
Flax, regular	.99
Flax, waterproofed	1.21
Compressed asbestos sheet	1.10
Wire insertion asbestos sheet	1.30
Rubber sheet	.66
Rubber sheet, wire insertion	.99
Rubber sheet, duck insertion	.55
Rubber sheet, cloth insertion	.25
Asbestos packing, twisted or braided, and graphited, for valve stems and stuffing boxes	1.21
Asbestos wick, ½- and 1-lb. balls	.75

MANILA ROPE—For rope smaller than ¾-in. the price is ½ to 2c. extra; while for quantities amounting to less than 600 ft. there is an extra charge of 1c. The number of feet per pound for the various sizes is as follows: ¾-in., 8 ft.; ⅞-in., 6; 1-in., 4½; 1 in., 3½; 1¼-in., 2 ft. 10 in.; 1½-in., 2 ft. 4 in. Following is price per pound for ½-in. and larger, in 1200-ft. coils:

Boston	$0.25	Birmingham	$0.26½
New York	.23	Denver	.22
Cincinnati	.23½	Kansas City	.23
Chicago	.21½	Seattle	.24
St. Paul	.24	St. Louis	.24
San Francisco	.22	Los Angeles	.22½

PIPE AND BOILER COVERING—Below are discounts and part of standard lists:

PIPE COVERING		BLOCKS AND SHEETS	
	Standard List		Price
Pipe Size	Per Lin. Ft.	Thickness	per Sq.Ft.
1-in.	$0.27	½-in.	$0.27
2-in.	.36	1 -in.	.30
6-in.	.80	1½-in.	.45
4-in.	.60	2 -in.	.60
3-in.	.45	2½-in.	.75
8-in.	1.10	3 -in.	.90
10-in.	1.30	3½-in.	1.05

85% magnesia high pressure, List

For low-pressure heating and return lines: 4-ply, 58% off; 3-ply, 60% off; 2-ply, 62% off

WIRING SUPPLIES—New York prices for tape and solder are as follows:

Friction tape, ⅙ lb. rolls	48c. per lb.
Rubber tape, ¼-lb. rolls	60c. per lb.
Wire solder, 50-lb. spools	46c. per lb.
Soldering paste, 2-oz. cans	$1.20 per doz.

COPPER WIRE—Prices per 1000 ft. for rubber-covered wire in following cities:

	Denver			St. Louis			Birmingham		
	Single Braid	Double Braid	Duplex	Single Braid	Double Braid	Duplex	Singie Braid	Double Braid	Duplex
No. 14	$17.00	$21.00	$39.40	$12.00	$16.00	$33.00	$13.00	$17.40	$36.80
10	25.65	28.90	64.75	27.20	31.00	69.00	21.40	24.40	42.75
8	36.45	40.25	88.45	38.00	42.00	78.00	42.35	44.35	.....
6	57.40	61.70	.....	.....	65.00	130.00	64.60	74.60	.....
4	83.40	88.70	.....	.....	93.00	.....	101.75	106.05	.....
2	126.60	132.80	.....	.....	140.00	.....	151.50	163.00	.....
1	164.15	172.40	.....	.....	182.00	.....	201.00	208.50	.....
0	206.80	206.80	.....	.....	242.00	.....	276.00	285.00	.....
00	278.80	278.80	.....	.....	290.00	.....	317.00	330.00	.....
000	341.65	341.65	.....	.....	360.00	.....	417.00	428.50	.....
0000	417.05	417.05	.....	.....	435.00	.....	516.00	516.00	.....

FREIGHT RATES—On finished steel products in the Pittsburgh district including plates, structural shapes, merchant steel, bars, pipe fittings, plain and galvanized wire nails, rivets, spikes, bolts, flat sheets (except planished), chains, etc., the following freight rates per 100 lb. are effective:

Boston	$0.30	New Orleans	$0.38½
Buffalo	.17	New York	.27
Chicago	.27	Philadelphia	.24½
Cincinnati	.23	St. Louis	.24
Cleveland	.17	St. Paul	.40½
Denver	.99	Pacific Coast (all rail)	1.25*
Kansas City	.59		

Note—Add 3% transportation tax. * Minimum carload, 80,000 lb.